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Rock Products

DEVOTED TO THE PRODUCTION AND SALE OF ROCK AND CLAY PRODUCTS.

Vol. II. LOUISVILLE, KY., MARCH, 1904. No. 12.

LESSONS FROM THE BUFFALO CONFERENCE.

The Bible's reference of where two or three get together, etc., still holds good in this unholy age. It applies even to the gathering at Buffalo where nearly two hundred people were gathered in annual conclave to discuss the possibilities of the year's business and review a little past history. Some of it was ancient at that, but I don't believe there was a man present at Buffalo who would not vote "Aye" if the question was asked, was this meeting profitable to you?

The attention at every session of the convention of the dealers was marked, and evidenced one thing—that satisfaction was due and it had arrived. The information brought out by the papers upon new building material was caught up like a piece of fat bacon dropped in the pond where fish were plenty. The joint session between cement manufacturers and dealers was a good deal like stirring the fat, and brought some interesting discussion. There being very few dissenters present, the conference was not a long one, but the spirit, "we sell to dealers only" was brought out very plainly, and the concurence of views practically of all present made the business sea of the builders supply business look very calm. There is alway a right and a wrong, and a consideration of this subject from both sides is necessary for the success of the Builders' Supply Association. But considering the present feeling on the matter, there is no room in the trade for the man who defies the dealer. Still as a caution to the dealer, please don't forget there is a certain trade where the line must be drawn, and sides must give and take.

The Buttonhole Association did a landoffice business. That social feature, which is one of the strongest factors in the prosperity of any business, was in good working condition. The information exchanged on methods and material was favorable, and all felt repaid for the effort of coming to Buffalo, and appreciated the fact that it was not necessary to go out and unload a wagon load of sewerage pipes while the " storm king" held sway. Iroquois Hotel seemed to be a very comfortable place and not much desire to visit the neighborhood was apparent.

STRAY NOTES.

The time will come when there will be one whole week of these meetings. The social session will be a part of it. The printers' devil played hob by exchanging the faces of the Hon. J. H. Ross and M. A. Reeb. Each discovered they were popular. Reeb said, "I never knew Ross was so handsome before," and Mr. Ross was sure he appreciated the rotund figure and beaming countenance of Reeb. So it was hard to tell if the exchange of names was going to cause a riot or the indictment of the printers' devil at the Rock Products office. We wish to apologize to these handsome gentlemen. Mistakes will happen in the best regulated families. We assure the readers of Rock Products that Mr. Reeb does not wear those beautiful gray whiskers, and Mr. Ross can not claim to be as round and ruddy as his neighbor, M. A. Reeb.

General Manager Chas. A. Matcham took this opportunity to get together his salesmen and agents of Lehigh Portland cement for a friendly session.

The two graces of the association, "Kling to it and treat him Kind." They were worthy of their fifth re-election.

The plaster men got together in bunches.

Them there vice presidents are a likely lot.

C. S. Bigsby, of the Garry Iron and Steel Co., Cleveland, presented to the delegates volume 1, No. 1, of the *Garry Messenger*. The front page shows the ace and tray shaking hands and then you see what the *Garry Messenger* has to say. We could tell you more about it and print a lot of good stuff, but space will not allow it this time, except to quote you what Garry has to say when your roof is leaking:

When your roof is leaking, leaking,
Dripping, dripping all the day,
You've a gaudy way of speaking
And some naughty things you say.
But your bad luck tarries, tarries,
And in life you see no fun—
Then you rush a wire to Garry's,
And your troubles all are done.

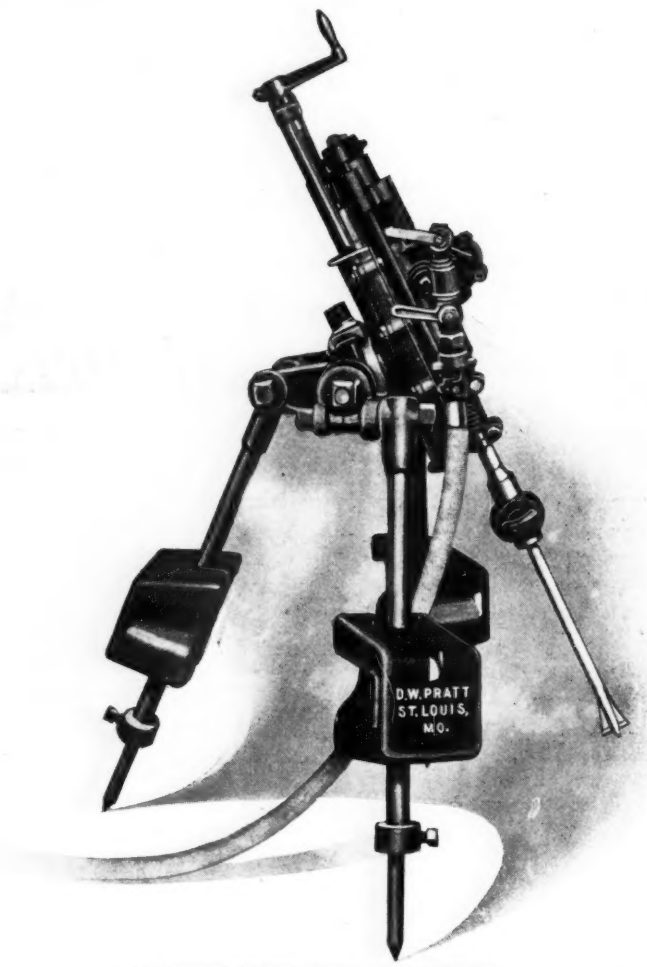
The Lover's Lane between the palisades back of the writing room and the lobby was a very popular place to talk it over.

Those moonlight pictures gave the editor the nightmare, but at the last minute it was impossible to make the changes desired.

A Snapshot of a Part of the Crowd Visiting Niagara Falls During the Buffalo Meeting.

Notwithstanding the snow storm and the appearance of winter the doings of the crowd who visited Niagara Falls were pleasant and profitable. The only losses on the trip were two members left behind and a beer glass carried off from the lunch counter.

One of the best known men in the cement trade in New York is Joseph H. Loughlan. Joe, as he is called by his friends, was welcomed at the builders' supply meeting. Mr. Loughlan severed his connection January 1, with the Atlas Cement Co., and now has charge of the sales of the Pennsylvania Cement Co., of New York.



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It has a variable stroke and can be used at a stroke where others fail; this being one of the essential qualifications of a good drill, especially in starting a hole or working through seams. It strikes a very hard blow and its recovery is instantaneous. It has no peer as a mudder.

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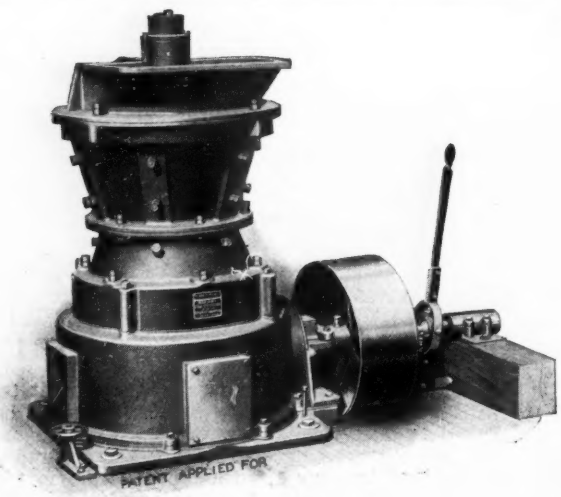

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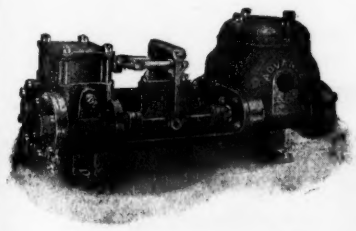

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This process covers any limestone carrying a fairly good percentage of Carbonate of Lime and also any other containing from 5 to 10 per cent of Silica, from which a first class product can be made.

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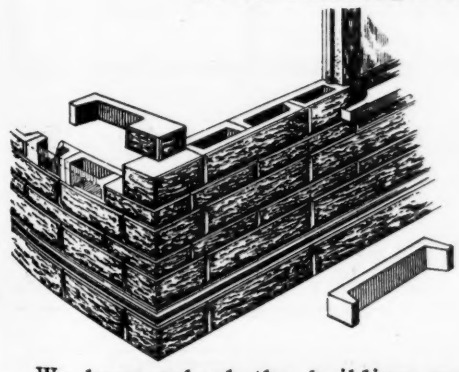
W. H. FISHER, Patentee.



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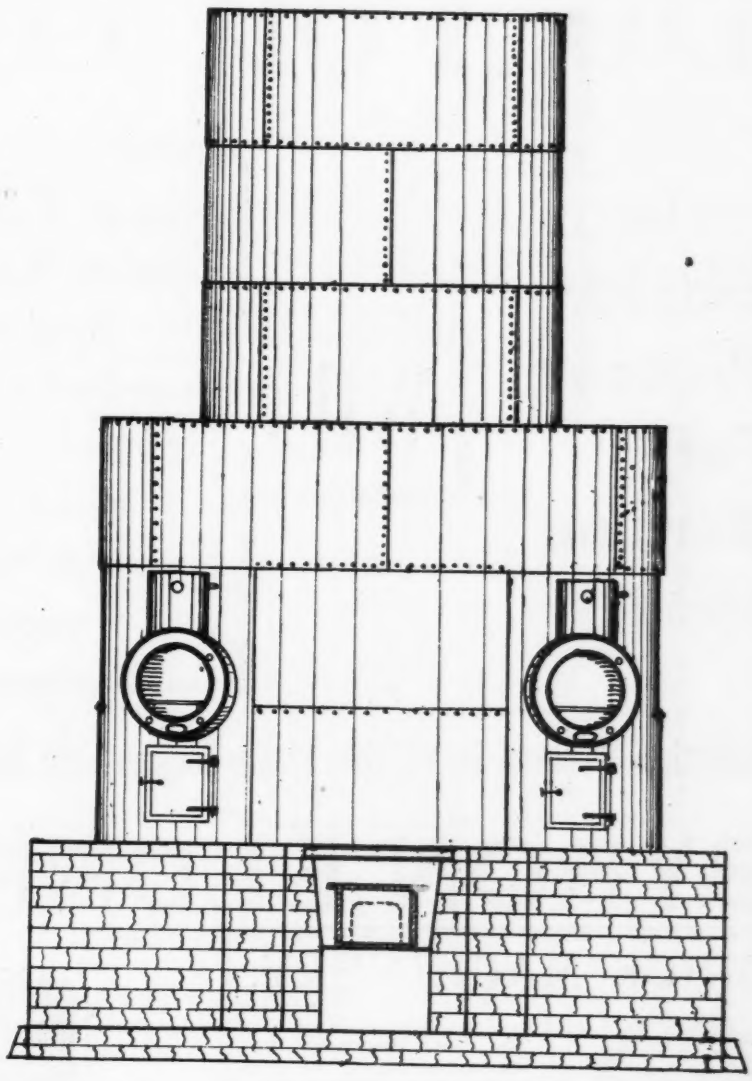
Built on stone foundation, 6 feet high. Solid brick kettle, capable of fully withstanding weight of falling stone. Only kiln with inside arches, thus confining all heat and avoiding loss from radiation. None of the usual repairs on outside of fire boxes caused by expansion and contraction. No burning out of iron work around fire boxes. If outside shell of kiln is painted twice a year with coal tar there is absolutely no wear-out of the iron. Adapted to burn soft coal, crude oil and wood.



OUTSIDE VIEW OF BOILER.

Turns out more lime, with same heat, than any other kiln. Draft is always regular and under control, regardless of weather. Same heat that burns lime-rock makes steam to operate conveyor carrying stone to top of kiln, about 50 feet high, and also serves to pump out quarries if situated within reasonable distance. Boilers always carry full dry head of steam, and arches do not burn out where boilers are placed in. This patent will save you at least 20 to 30 per cent. on burning of lime. Only kiln in market to-day turning out perfect product at reduced cost, doing its own work and running as nearly automatic as possible. This kiln burns either lime or cement rock.

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A monthly trade journal devoted to the interests of the manufacturers and dealers in rock products nd kindred lines, including Lime, Cement, Salt, Sand, Slate, Granite, Marble, Sandstone, Grindstones, Artificial Stone, Emery Stone, Quarries, Monuments, Manganese, Asphalt, Phosphates, Plaster, Terra Cotta, Roofing and Roofing Tile, Coal, Oil, Mineral Wool, Brick, etc.

The mission of ROCK PRODUCTS is to serve the trade in any and every honorable way possible, to promote better profits and make life more pleasant for those engaged in the business to which it caters. With this end in view, criticism is courted, and all are invited to use its columns to further ideas and suggestions for the good of the trade. The office, too, is at the service of the constituents of this paper; so when you want to buy or sell, or merely ask a question, write, and when you are in town, call and make it your headquarters.

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BRANCH OFFICE, NEW YORK CITY:
Room 502, 136 Liberty Street,
ALEXANDER CRISTADORO, *Manager.*

LOUISVILLE, KY., MARCH, 1904.

Delayed Shipment.

SINCE 1857 there has never been such an unfriendly winter for the cutting and manufacturing of granite in the East. Barre and Quincy manufacturers have suffered immensely and the probabilities are that their orders will be largely delayed for Memorial Day monumental work. As an illustration of what the weather man can do, employes of stone cutters were not able to work over seven full days in the month of January, while the month of February will show one-half that time put in on cut stone. From the fact that they are so near the Coast, the extreme cold is not so serious as the fact that mercury has been floating above the zero mark *all* this year, and the manufacturers and quarry owners are in a quandary over the delivery of early shipments. Therefore, the customers of our Eastern friends, and other granite points, must take this into consideration. Don't blame it on the manufacturer, but on the weather man.

THE paving contractors can now get busy.

THE tube mill seems to be growing some in size.

A LITTLE of the association spirit might add a good flavor to the salt business to-day.

SPEAKING of growing industries, there is nothing slow about the sand business these days.

IT is a good time for manufacturers of tile roofing to come to the front and push their product.

COUNTRY road building promises to be active this year, and to call for a liberal amount of crushed stone.

MODERN methods can be applied to quarry stripping with good results just as well as to the finishing of stone.

THE lime men are helping the farmers to study the fertilizer question, and both the farmers and lime men will gain thereby.

THE birth rate of new cement block machines is getting along at such a gait that we will soon have quite a large family of these appliances.

THE impact pulverizer and separator are both knocking for admittance into the good graces of the lime, cement and stone crushing people.

VISITING is a great thing in the trade, and one of the best visits for the retail monument man to make is to the quarries and mills which produce his stock.

THE railway ballast business looked gloomy for a while the first of the year, but the outlook now is brighter and the railroads are placing contracts more freely.

IF you are a retail dealer in building material, and sell paint, now is the time to stock up and prepare to push things, for the painting and whitewashing season will soon be here.

QUARRY owners are now rolling up their sleeves and preparing for a busy season, and keeping one eye on the weather man to watch for a disposition on his part to permit active operations.

THE social sessions held by the stone men last month demonstrated very emphatically that while they handle a hard, cold product, there is nothing either hard or cold about the hospitality and social spirit of the progressive stone man.

THE Buffalo meeting was a great one, and has unquestionably resulted in bringing manufacturers and dealers of builders' supplies in closer touch and put them in shape to work better together for their mutual advantage.

THE 100-pound unit of measure is so near unanimously favored by the lime trade that its general adoption should follow at once without a dissenting voice. Read what the trade has to say about it this month.

THE general prosperity of the country does not mean an increase of death rate, but is does mean that people will spend more money for monuments, and those who would buy a $25.00 monument will buy a $100.00 stone.

THERE is no need to give a man with a new idea the earth because he has brought out some new machine or appliance, but he is entitled to an audience and if he demonstrates that he has an appliance that will make money for you in your business he is entitled to patronage and a fair return for his expended genius.

THE news from Chicago this month present an object lesson in how a decline in the price of building material can stimulate trade, from which we may deduct that while it is never good business to sell a product at a price below that which brings a fair profit, it is advisable to keep the price of building material down to the point where it will not discourage prospective builders.

THOSE interested in pushing concrete construction should bear in mind that an occasional collapse of a structure of this kind, due to carelessness or ignorance in construction, creates a world of prejudice in the public mind that it takes time and lots of demonstration to remove. The trade should direct its efforts toward preventing the erection of any concrete work that is liable to fail, for in this, as in other things, a little prevention is better than a cure.

ARTIFICIAL stone products will not supercede stone as much as it will brick and wood, and the stone men can rest comparatively easy on that point—the outlook is for the trade to use more stone this year than ever.

QUITE a number of faults and flaws develop in asphalt pavements, but there are no flaws of this nature on record that seem to be as serious or as hard to repair as the flaws shown in the financing of what was known as the asphalt trust. All the earnest men in the trade will welcome efforts to correct flaws of both kinds, for asphalt is a great paving material and should have a fair show.

THE cost of all kinds of city street paving has been on the increase for several years, which is naturally to be expected when we consider the increase in the cost of labor in the past few years. It is but natural, too, for city fathers, at least those who are conscientious, to want to hold the cost down as much as possible, but it is doubtful if the erection of municipal crushing plants will serve this end. Also, the trade naturally feels that the stone crushing business is a business of its own, and city fathers should attend to running the city, and let the stone men attend to running the crushers.

ONE of our correspondents has laid before us a problem in cement floor construction which is giving trouble, and asks for a solution. The floor in question was constructed as per specifications with a three-inch base made of one part natural cement, two parts sand and four parts gravel, and was finished with a top dressing one inch thick, composed of one part of Portland cement and one and a half parts sand. The trouble came when it was found that the top dressing did not properly adhere to the base. The correspondent says that he has always contended that natural and Portland cement, owing to the different properties and manner of setting, will not form a bond, and for this reason, he objected in the first place to laying the floor by these specifications. It strikes us in regard to this matter that it is bad policy to lay a base and then finish it afterward with a top dressing even when Portland cement is used for both, unless the top dressing is laid on immediately so that the base has no chance to begin setting before the top is applied. We would like to hear from the experts in the trade on this, however, and especially on the question raised in regard to Portland and natural cement refusing to bond together.

THE production of Portland cement in 1903, according to the best estimates available exceeded that of 1902 about 3,000,000 barrels, and there was nearly a million more imported. The estimates of the total production vary from 20,000,000 to 20,500,000, and the import for the year was about 2,500,000 barrels. The total consumption for 1903, according to estimates, was a little over 20,500,000. The consumption in 1902 was 17,230,644 barrels, and the production was practically equal to the consumption. It is estimated that during the past year about 7,000,000 barrels of natural cement was used and about 5,000,000 pozzoulan was used. During the past year the manufacturing capacity in Portland cement was increased considerably, but the outlook now is that there will be sufficient increase in the demand this year to take care of all of it. Different uses for cement have been developing at such a rapid rate that it is dufficult to keep up with all of them or get a reliable estimate on the possible quantity of cement that will be required in these new lines. The outlook is very cheerful, however, and if the year makes good what it promises now, 1904 will round out as the biggest year in the history of the Portland cement industry in the country.

From Our Own

Correspondents.

CHICAGO.

CHICAGO, ILL., February 26.—Although at this writing winter still holds a firm grasp and checks business in the lime, cement, concrete and stone industries in this city, our building contractors, and nearly all who are engaged in the above named industries are looking forward to the greatest boom the coming season in the history of the city, aside from the World's Fair year. The most important reason for this view is the fact that there will be no labor troubles in the industry. Ninety-five per cent. of the unions have agreements with the contractors which do not expire until 1905 or later. I have talked with a number of firms engaged in the building and building material interests, and they all express their confidence that the coming season will be a great year for business. "There is a great demand for buildings," said E. M. Craig, secretary of the Building Contractors, "and the outlook is certainly a most prosperous one." There will be no change in the wages of the brickmakers this year. The date for either the union or employers to ask for a change has passed. Building operations for the year so far make a splendid showing. During January permits were taken out for the construction of 260 buildings, involving a cost of $2,623,950.00, which is an increase in cost of $580,015.00 over January, 1903.

SPIRITED DEMAND FOR BRICK.

A month or two ago I noted in my letter the decline in the price of brick to $4.25 per thousand. At that time every brick yard in Chicago was overflowing with brick; in fact, the supply was so great that every brick yard in Chicago was closed with one exception. But a great and sudden change in this situation was inaugurated this present month, and it came so suddenly that every man in the building trades was taken by surprise. At the decline brick began to move lively and stocks on hand began to decrease rapidly. There was, all of a sudden, a great and spirited demand for brick. The demand recently has made great inroads on the supply and the brickmakers believe that all the yards will be opened earlier this year than ever before. Two weeks ago the price was jumped from $4.25 to $6.50. Calling at the office of the Illinois Brick Co., 912 to 917 Chamber of Commerce Building, President Geo. C. Prussing confirmed the advance in the price. He said that heavy shipments from the yards in Cook County has largely reduced the stocks on hand at the close of last season and that manufacturing will begin again upon the return of warmer weather, and then 1,700 employes, who have been idle since last November will be given employment.

The Northwestern Terra Cotta Co., of this city, has accomplished some remarkable successes since its organization several years ago. It is one of the oldest companies of the kind in the West, and its material has grown in great favor with many builders. The improvements made in its manufacture have been rapid. Among the many advantages of this material are its indifference to climatic influences, its fire-resisting qualities, its comparatively light weight and ease with which it may be formed into the most intricate as well as artistic forms. The company produces this material in a great variety of colors and shades to match almost any brick or stone. This firm has furnished the material for many notable buildings in Chicago, and for nearly all the great buildings in the great cities built and now building.

A GOOD TIME TO BUILD.

Talking with Mr. E. R. Graham, of D. H. Burnham & Co., the well known architects, the other day, I asked what he thought of the building outlook. He said: "It is a good time to build. At present building material prices have already dropped from 5 to 10 per cent., and this alone will be or ought to be, some inducement. I do not anticipate that building material will go any lower. Steel can be secured more readily than last year, and labor conditions are favorable to an active season. Most of the sub-contractors are more anxious for work than they were last year. While we expect an increase in the building industry, we don't think that the mere fact of a 5 or 10 per cent. decrease in the price of building material will cause it. A big corporation will not delay building for an item like that. We have advised all our patrons to begin work now, because later in the season prices may go up.

The city authorities of Chicago are seriously considering the question of establishing a crushed stone plant at the Bridewell where there is an abundance of stone in the limestone quarries it owns there.

SOME LABOR PRICES.

The price of wages now ruling in this city for labor is: bricklayers, 60 cents; stone masons, 50 cents; marble cutters, 37½ cents; marble setters, 50 cents. Prices in the large cities East are somewhat higher than they are here. Bricklayers in New York are paid 65 cents, and in San Francisco 75 cents.

The Allis-Chalmers Co. a few days ago announced a wide expansion of the corporation. It has formed a coalition with several important English and European manufacturing concerns, united under the name of the Turbine Advisory Council. This was said to be a practical doubling of the industrial activity of the company. It is stated that for the present at least there will be no increase in the plants of the corporation.

The large stone crushing plant, ordered by the Imperial Railroad Co., of China, from The Allis-Chalmers Co., was completed some little time ago and shipped there. It is at this writing nearing Ninchwang, to which port the shipment was made.

The largest cofferdam in the United States is located right here in Chicago at the Thirty-ninth Street pumping station. At present the foundations for the pumping station are being laid there. The bottom of the excavation within the cofferdam is thirty-one feet below the surface of the lake. About 30,000 yards of concrete are being placed upon these foundations. The concrete business in that vicinity is especially lively at this time, although the severe weather has interfered considerably with the work.

The Brownell Improvement Co., of this city, contemplates some extensive improvements in their quarry at Thornton, Ill., including new crushers, new locomotive hoists, etc. They anticipate a large business in macadam concrete and other work this season. They have a large contract in track raising in this city, which will take some months to complete.

Some new lime kilns introduced here, and which were referred to in the January letter, have attracted considerable attention, and have given fine satisfaction since the new methods of lime burning have been introduced. The days of the old style lime kilns are numbered in all sections where enterprise rules, and the old methods are to be superceded by the new, which are not only more expeditious in their work but are more economical.

SOME VISITORS OF THE MONTH.

Mr. Armfield, of Armfield & Cartwright, Portland, Ind., is now here buying machinery for a large crushed stone plant at his quarry near Portland. He is going to install the largest crushed stone outfit in Indiana, consisting of Nos. 8 and 5 gyratory crushers, with the usual equipment of elevator screens, etc., and will be prepared to handle the macadum and railroad demand for crushed stone in the most modern manner. He has a large ballast contract with Pennsylvania Railroad Co. for several years to come, amounting to about a half a million yards. His firm is an old and well established one; in fact, one of the strongest in Northern Indiana. The firm does a large business in lime and cement, as well as dimension stone.

Mr. James Pringle, of the Contractors' Supply and Equipment Co., Kansas City branch, was in town a few days ago talking business with the head office, 232 Fifth Avenue. This prosperous and deservedly popular supply house, reports business very good and prospects excellent for the year's business. They have branches in Kansas City and New York, and agencies all over the United States. The call for the Smith concrete mixer is growing so rapidly that they have had to largely increase their factory at Milwaukee.

The Milwaukee Falls Lime Co., of Milwaukee, Wis., are about to add a crushing plant to their lime plant at Grafton, Wis. The purpose is to utilize their waste material and sell the broken stone to their regular customers for lime and cement. It will be a good-sized plant, with a capacity of about 300 cubic yards a day.

Mr. Orbison, of Orbison & O'Keefe, Appleton, Wis., is in town this week, looking up the cement market. He expects to have some large concrete cement contracts, and will probably use a large quantity of cement this year.

CEMENT, LIME AND STONE.

The Chicago Portland Cement Co,, 513 Stock Exchange Building, with their works at Oglesby, Ill., near La Salle, which is in every sense a most complete one, are now turning out a little over four hundred thousand barrels annually. The buildings and power of the plant is designed for an increase of fifty per cent. Few mills of this kind are more thoroughly equipped—the machinery equipment is the best that can possibly be obtained. The company controls about 2,000 acres of land through which flows the Vermillion river. Lime rock and shale clays are the raw materials used for making the "Chicago A A" Portland cement. The lime rock is a deposit about 22 feet thick, and immediately below the rock lie the shale clays used, to a depth of about 14 feet in two principal strata. The company claims that no more favorable material for making a superior Portland cement are to be found on this continent.

Mr. Norman D. Fraser is president of the company; D. R. Fraser, vice president, and R. Gates, secretary and treasurer.

The Sand-Lime Brick Agency here report everything in their special line running along smoothly and exceptionally in a most satisfactory manner. Their New York and San Francisco agencies are busy and the agency here is always full of business.

Dolese & Shepherd, 184 La Salle Street, are preparing to push all their contracts, both of a public and private nature, to the utmost, as soon as the weather will permit them to resume work. All the firms who handle concrete and cement have been badly handicapped by the severe cold weather, but see a brisk season ahead as soon as the weather will permit them to resume work.

The Artesian Stone and Lime Works Co. report business quiet, but they look for a sharp and vigorous awakening as soon as the winter is broken. They will start in the spring with large supplies and will be fully prepared to meet promptly all demands made upon them for both broken stone and lime. It is probable that they may make some new improvements in their plant soon.

The Chicago Lime Co., room 419, 138 Washington Street, are looking forward to an active business season as soon as warm weather again sets in. They say prospects in the building line are excellent, and that there is certain to be a large demand for all kinds of building material.

The Wisconsin Lime and Cement Co., 665 Chamber of Commerce Building, reports outlook good, but at present, as for some time past, business has ruled very quiet. The company has its works in Wisconsin and has a large and thoroughly equipped plant.

Geo. De Smet, 317 Chamber of Commerce Building, represent the works of the Vulcanite Portland Cement Co., at Vulcanite, N. J. Mr. De Smet says that the cement he represents bears a splendid record and differs from other Portland cements in the care with which it is prepared, the high development of the details of manufacture, and the systematic course of selection and inspection which it undergoes at every step of the process. Its use in some of the finest business buildings in all parts of the United States is a guarantee of its quality. Mr. De Smet regards the business outlook for the coming year as good, and sees a prosperous business ahead as soon as the spring weather prevails.

Cement and concrete men are directing attention to the Iroquois Theater building as a proof that the best fire broof materials are the two substances named. No where in the building where there was abundant use made of cement and concrete was the building in any way harmed. The cement and concrete resisted the intense heat forced against it, where other materials would have quickly perished.

Cement men will lay in this city the coming summer over 80 miles of cement sidewalk, the old board walks having been abolished. This will cause a large use for cement right here. It is also the intention of the city to extend the putting down of asphalt on many of the leading thoroughfares, some of which are in the heart of the business district, and will dispense with the laying of granite.

GREATER NEW YORK.

NEW YORK, N. Y., February 27.—A lime manufacturer said: "Business promises undoubtedly to be very good this year, unless people make fools of themselves again as they did last year. When they had a prospect for a full mill at top prices they were not satisfied but wanted to take the trade away from every one else, and they plunged accordingly, putting up extensions to accommodate the bigger trade they were going to get, and then when the slump came they had to sell lime somehow and the trouble was on. But with regard to ourselves, we were willing to let the other fellows have some of the trade and did not try for it all, but just picked up some of the best of it and catered to that with a uniform satisfactory product. We held them at our prices right through all the trouble, because they got to knowing what they could do with our product and that they could do the same thing every time, and so they stuck to it. We certainly came out immensely better than if we had spread ourselves out wildly, endeavoring to corral everything in sight."

A BRIGHT OUTLOOK FOR BUILDING.

Mr. Smith, of the Sayre & Fisher Co., said that a number of laid-by plans had recently been pulled out for use this spring which would call for a very large amount of front bricks and a corresponding coming in of orders was noticeable. The labor troubles have been pretty well quieted, and altogether the outlook is good for a bright year. Common brick has been, and now is, holding up remarkably well and bids fair to go decidedly higher this spring.

Mr. Hiram Snyder felt that there was much encouragement for the cement trade for the year. This severe and protracted cold snap added to the ordinary weather disabilities of winter, had made things very slow just for the moment. But with the labor troubles fairly settled, the prospect was very good. Much suspended work will be put under way again, and new work is freely scheduled for operation. The Baltimore fire will without doubt give a large impetus to the demand for cement. Iron and steel showed their weakness under such conditions when unprotected, and the system of our building department in having all iron and steel construction, well protected by brick work or cement, will be followed in the rebuilding of Baltimore, with the result that there will be a heavy demand for cement there, which, with the trade in prospect here, will undoubtedly give us a good, satisfactory year.

The Hurricane Isle Granite Co., of 208 Broadway, reports that business is opening up very well all over the country. They are getting good reports with inquiries, and orders from every section. Local inquiries in New York have picked up very much and the prospect for the season here is good.

The Hudson River Blue Stone Co. find the season setting in very encouragingly. The flagging and curbing branch of the industry for city and town work is very good every where. The building and construction end of the business which languished during the latter part of last year, is now reviving and all the indications point to a very good year.

Mr. Bryce quotes lime common at 75 to 80c and Jointa at $1.00. Business is coming in well and the outlook is very good.

AMONG THE MACHINERY MEN.

The Ingersoll-Sergeant Co. expect to have a new and improved channelling machine, ready perhaps next month.

Mr. Johnson, of the Pulsometer Pump Co., said: "We pump men have been up against it hard this winter all over the country. Not only has quarry work been held up but open-cut work has been impossible, as the ground was frozen so hard that blasting was necessary instead of ordinary digging. We may have plenty more of it in February and March, but yet the reports that come in to us are very good and we look for a good busy season."

Mr. H. G. Kotten, 120 Liberty Street, says that business in pneumatic tools and appliances has been a little dull recently owing to the unusually cold weather, but the outlook for the spring trade is very bright, judging by the number of inquiries that are coming in daily. He has taken advantage of the interval to push work on the new machines which will be placed on the market within a month or so.

Mr. Kotten desires to caution the trade to refrain from purchasing a certain pneumatic surfacing machine, pneumatic tool and stroke changing device, identical with his, which is being furnished at greatly reduced prices. He has run across several of these in different places which have been purchased, presumably in ignorance of his strong patents on these machines. Mr. Kotten does not wish to annoy the trade by sending out threatening letters, but he begs to notify them that the sellers and users are equally liable with the manufacturers, and that the matter is now in the hands of his attorneys, and he requests them to avoid buying or using these infringing machines, and so save themselves the consequent trouble and expense.

BRICK HOLDING STEADY.

The extremely cold weather, together with its long duration, has made this an exceptionally slow winter, but the general feeling is one of hopefulness. Occasionally a desponding note is heard, but the majority of opinions is that it will be a good conservative year, and none of the unpleasant experiences of the past twelve months need be apprehended if there will be but exercised the caution that was somewhat cast aside last spring when everything was a booming. The demand from Baltimore is expected to keep this market clear of the overplus that is always so disturbing a factor. Common brick is holding very steady at $8.50, and with the shortage with which the year commenced, it appears to be the general opinion, that we will see very high prices in early spring until the new yield begins to come into the market. A quiet and steady year with regard to labor questions is looked for.

Mr. A. Moyer, of the Vulcanite Portland Cement Co., is out of town and will be away probably a couple of weeks.

Mr. Arthur Wells, 1133 Broadway, says things are very slow up at the slate quarries, owing to the intense cold which makes work impossible. It makes stock almost impossible to get and all orders are held up accordingly, till out door work can be resumed.

The old Bangor Slate Quarry, of Bangor, Pa., has started up again after an enforced idleness of three or four months caused by some trouble with the union.

Mr. Perry, of the Rockland and Rockport Lime Co., had just returned from Baltimore where he made a general survey of the burned district. He says the New York men are getting to the front very well and there will undoubtedly be a great deal of trade secured there. It will call for a vast quantity of lime, plaster and cement, and will absorb all the surplus of lime, as well as of other materials, that ordinarily affect the market and will tend to keep it steady. Trade has been very fair, considering all the conditions, and although prices have not advanced any, yet they remain very steady with a good prospect.

The Sergeant-Ingersoll Co. will soon bring out a new channeller.

Mr. Alston, of the Alston Stone Sawing Machine Co., 10 E. 23rd Street, is now out West visiting the trade in the interest of his new gang saw attachment.

The local granite men have come together under the title of "The Granite Manufacturers' and Dealers' Association of New York and vicinity." The first meeting was held on August 14, 1903; the constitution and bylaws were adopted September 3, and the officers were elected September 18. They are: W. R. Arnold, president; W. P. Baird, vice president, and J. E. Dutton, secretary. The directors are: E. J. Neary, for one year; John Hynes, for two years, and George Orr, for three years. Until further notice the office address of the association will be: J. E. Dutton, 42 E. 23rd Street, New York City. Every one in the trade having yards, except two or three, have joined. The aims of the association are protective and beneficial and its whole scope is so practical and conservative that it is confidently expected that the others will soon come in also.

Has Sold Out.

J. L. Dozer, Fostoria, Ohio.—On August 22 I sold my quarry to P. L. Van Alstyne of Sandusky City, and it is now operated under the firm name of the Holran Stone Co., by J. R. Holran, with other competent workmen. I had a good quarry and good business built up, but was willing to let it go, for the reason that it is a difficult matter to get a sufficient number of men to work at the stone business. Working men of to-day are so restless and unsettled and unreliable. It has gotten to be a hard matter to carry out contracts, or fulfill promises when working men are so unreliable and uncertain. I have retired from the quarry business and feel relieved, but wish my successors an abundant success and prosperity.

MEMPHIS.

MEMPHIS, TENN., February 24.—A new season is opening in rock products lines just now as spring comes upon this city, with its flood of construction work. The building permits for Memphis ran beyond $100,000.00 the last month and the outlook is very good for a high tide season. The addition to the custom house here has meant a large amount of stone work. The municipal paving contracts and the public parks improvements have each meant a good deal in those lines.

The Chickasaw Stone Co., constituted largely of Memphis capital, is shipping quite an amount of crushed stone here for street work.

The Memphis Hydraulic Stone Co. have enlarged their plant already, though this is comparatively a new industry in the city. Mr. Steve Wright, of the Wright Lime and Cement Co., looks after the manufacturing of the product. It has been used on several handsome new residences out in the Overton Park neighborhood and on some business structures with noteworthy success.

The Arkansas State capitol commission has lately been authorized to make a contract with the Arkansas Brick and Manufacturing Co. for 2,000,000 brick to be used in constructing the backing up of the stone walls and providing basis for certain of the columns.

Over at Knoxville, Tenn., the Tennessee Marble Co., which was granted a charter some months ago, has lately completed its organization. The following officers were elected: President, W. J. Roberts; vice presient, H. M. C. Reynolds; secretary, W. C. Heyser; treasurer, H. M. Farnsworth. Marshall H. Farnsworth is a prominent manufacturer, of Cleveland, Ohio. Wm. J. Roberts is also a manufacturer of the same city; H. M. Farnsworth is a banker of Cleveland, Ohio; C. Heyser is a lumberman, and Mr. Brown has been in the marble business of Knoxville for some years. The capital stock of the new concern is $125,000.00 and the company has recently leased the quarries of Tenoway and McNutt at Concord. An office has been opened at 606 Gay Street, Knoxville. A mill for sawing marble will be erected.

Renewed interest is being taken in the phosphate industry in Hickman County, Tenn. E. L. Gregory, of Mt. Pleasant, has just secured the mineral rights on a body of land at Gray's Bend near Centreville. W. W. Ratliff, of the same neighborhood, secured $7,000 for the mineral rights on his farm near Centreville.

W. J. Howard, of Columbia, Tenn., about the first of this month, transferred 175 acres of phosphate land in the Mt. Pleasant phosphate fields to the South Carolina Mining and Manufacturing Co., the consideration being a quarter of a million dollars. This included not only the phosphate beds but a large phosphate plant and improvements. The Ridley Phosphate Co. also transferred to the South Carolina Mining and Manufacturing Co., contemporaneously, 534 acres of phosphate land near Mt. Pleasant, for $95,000.00.

Companies representing East Liverpool, Ohio, and St. Louis pottery concerns have lately been developing the pottery clay in Henry County, Tenn., near Paris. The railroads have been building some spur tracks to the district, and it is reported that a very fine vein of pottery clay has been located in that county by the Government experts. Plans are now on foot to build a manufactory along the railroad and manufacture the product at home.

DeKalb County, Ga., is to have a new railroad from Lithonia to Rock Chapel. It will be built by the Georgia Granite Co. and will be 3½ miles long. W. H. Patterson, Frank Reynolds, F. M. Farley, E. S. McCandless and others have applied for a charter to build the road and work will be started at once. It is the plan to develop their granite beds at Rock Chapel mountain, where a large quarry will be opened at once. The new railroad will market the quarry products. This is to be one of the largest quarrying industries in Georgia.

LITTLE ROCK.

LITTLE ROCK, ARK., February 25.—The Arkansas capital is the center of activity in the development of a variety of rock products that promises to add not a little to the wealth of one of the growing cities of the Southwest.

Two beauxite mines near here represent an investment of nearly a million dollars. They are being worked constantly with large forces. The

product goes to Pittsburg and St. Louis for reduction, yielding alum and aluminum. There are extensive beauxite lands in this part of the State, and they are regarded as valuable property. The mines in operation are profitable.

There are mountains of solid granite near here, and extensive development is planned by the Twen Cen Granite Co. This corporation began business about six months ago. O. W. Krum, a practical granite man, who learned the business in New England, is in charge of the operations as general manager. Mr. Albert H. Lea is secretary and general agent. Northern capital and Little Rock people are backing the enterprise.

Quarries have already been opened and a fine quality of gray and blue granite for building and monumental purposes, is being produced. Experts have pronounced it the equal of any similar building to be found any where in the United States.

The property is adjacent to the Rock Island railroad, and switches run into the quarries. The supply of material exists in the greatest abundance and it can be quarried at a minimum cost. The quarries and cutting sheds are equipped with pneumatic tools and all the latest appliances in the way of machinery. The work is in charge of practical and experienced granite men.

The company also has a crusher with a capacity of 500 tons daily. It claims to turn out a superior product for all sorts of concrete and granolithic work. This development is still in its infancy, and it is expected that within a short time many more quarries will be opened and the operations made much more extensive.

Little Rock is also expecting great things from Arkansas rock asphalt. The one asphalt street in the city was made by the Arkansas Asphalt Co., about a year ago. It is still a good street, showing but little signs of wear, and is believed to demonstrate the value of the native product.

S. A. Lieper, who has been for many years in the lime and brick business here, has organized a corporation for the manufacture of sand-lime brick. A plant is being put in to turn out 40,000 a day. A sand pump to take sand from the bottom of the Arkansas river, will be part of the plant.

WHEELING.

WHEELING, W. VA., February 26.—W. H. Truschel & Co., 1423 Main Street, Wheeling, W. Va., dealers in roofing material, report that while the sale of roofing has been light during the winter, spring trade opened a couple of weeks ago and is coming strong. They therefore anticipate a good summer trade.

Christian Lotz, contractor and builder of stone work, reports nothing doing yet, but that there is considerable work laid out to be taken up as soon as the weather will permit.

B. F. Perkins, general contractor and builder of brick work, reports that spring business is looming up pretty strong with them.

W. P. Wilson, of W. A. Wilson, states that lime, cement and heavy material, is a minor part of their business, and that trade has been light. They go more to the materials used in the interior of a building.

Last fall the Wagner Manufacturing Co. was organized and took over the business of the Acme Paving Co., which was a branch of the Columbus, Ohio, Co., and did paving and general concrete work. In October they purchased the patent rights for several counties of Harmon S. Palmer and now have a plant making concrete block at 2320 Water Street. Mr. J. D. Wood is manager.

The Colorado Fuel and Iron Co., which has headquarters at Pueblo, Colo., has purchased limestone property near Howard, Colo., on which it is said they will develop quarries on an extensive scale and spend something like $75,000.00, equipping same and opening up. It seems to be the intention to equip a quarry plant with a capacity for quarrying and loading out 1,000 tons daily.

The Vermont Marble Co., Rutland, Vt., has a dividend scheme for its employes which is very commendable. Just what the scheme in detail is we do not know, but a newspaper item at hand tells that they paid a 9 per cent. dividend to their employes in proportion to the amount that had traded in their store. We judge from this that they figure up at the end of the year and return a certain per cent. of the store's profits to those who have bought from the company's store during the year.

Granite.

QUINCY.

QUINCY, MASS., February 23.—There are two days in each year when the local granite manufacturer and quarry-owner, eschew business for pleasure, meet one another in a social way, and during such re-unions strengthen the ties of good fellowship in the trade. An outing is enjoyed every summer at one or other of the numerous sea-side resorts which abound hereabouts. The mid-winter function is usually held indoors and it is a toss-up which of the two is more enjoyable. Suffice it to say that the custom is a good one, and much benefit is bound to accrue from these gatherings.

The mid-winter banquet was held this year on the evening of February 11, the Quincy House, Boston. The affair was a gratifying success in every particular, and it plainly proves how the manufacturers, acting as an association, may accomplish excellent results. If one were privileged to look into the banquet hall on the evening in question he could scarcely conceive how 200 granite men, with invited guests, could cavort so joyously at a time when the elements seemed to be in a conspiracy to sorely cripple their trade interests. All thought of business care and the fell machinations of the weather man were forgotten on the occasion, for the city's solid men were on pleasure bent and ample provision was made that every one would receive his share. If he did not he had himself to blame, for the committee lent every endeavor to have enough and more of ease, contentment and joy. Special street cars brought the members to the Quincy depot in time for the 5:12 Boston bound train. Special cars were attached, so that manufacturers could not go astray if they wished.

Arrived in the South Station, an affair not down on the program was witnessed, and which later was referred to in a jocose way by an after-dinner speaker. A car next to the Quincy train caught fire from a gas hose, used for filling the cars with illuminating gas, which in turn, ignited the car occupied by the granite men. The passengers, as soon as they left the train, watched the fire leisurely, until the train-men, to prevent a conflagration, pulled the blazing cars into the yard, where the flames were extinguished.

One of the after-dinner speakers blamed President Harry Nicoll for starting the commotion. He said were it not for Harry's burning enthusiasm and firey red hair the blaze would not have started and the dinner delayed. The sally of wit was greeted with uproarous laughter, and none enjoyed the joke any better than did President Nicoll.

In Boston special electric cars awaited the gathering to convey them to the hotel. After a delay made necessary by the crowded condition of Summer Street, which was filled with fire apparatus, the Quincy House was reached at 6:20 o'clock.

Shortly after 6:30 President Nicoll, accompanied by Mayor Charles M. Bryant, and followed by the invited guests, entered the banquet hall to the enlivening strains of orchestral music. President Nicoll's speech of welcome was brief and to the point. He bade every body welcome, told them to eat heartily and make themselves at home.

The association did not attend the theater this year, but instead the pick of the vaudeville artists performing in Boston, "did a turn" for the manufacturers at the end of the meal, and preceding the opening of the most mandial exercises.

After dinner President Nicoll rapped for order and introduced John L. Miller as the toastmaster of the occasion. Mr. Miller, as on former events of its kind, made a praiseworthy presiding officer. His trade talk is always eagerly listened to and he dealt forensic body blows to several evils of the trade.

He did not spare the jobber whom he likened to a barnacle clinging to the hull of trade, and hoped that the time would soon come when the manufacturer would knock him off and do business independently.

The speaker pointed out the immense field which awaited the sale and use of Quincy granite in the South. He referred also to the West as another field which awaited the harvest of the energetic Quincy association. "An outlay of $200.00 by each firm to establish a central office for advertising, booming and sending out agents to solicit and talk Quincy granite, would be," said Mr. Miller, "one of the most profitable investments the manufacturers could make."

Other speakers were Mayor Charles M. Bryant, Senator A. A. Brackett, Representatives Freeman and Fallon, Rupert F. Claflin, Henry McGrath and President Walter F. Nicoll, of the city council. Each had a good word to say of the granite trade in general and the Quincy manufacturer in particular.

The invited guests included: Mayor Charles M. Bryant, Senator A. A. Brackett, Representatives Peter T. Fallon and Richard R. Freeman, President Walter F. Nicoll, of the city council, Rupert F. Claflin of the Granite Bank; Horace F. Spear, of the Mount Nollaston Bank, Lewis Badger, D. H. McNeil, C. F. Spencer, A. M. Hunt, Postmaster C. L. Hammond, and members of the press. Congressmen Wm. S. McNary, John W. McAnamey and Col. John Shaw, were invited but unable to attend.

The success of the affair was due to the following efficient committee: Harry S. Nicoll, John L. Miller and James H. Elcock.

Coming down to sterner realities, there has been but little doing in a trade way since before the holidays. A long severe winter has held everything hard and fast. January started with intense cold and heaps of snow. There has been no let up to date. Quarrying and manufacturing have progressed but slowly, and already stock shortage is feared, besides a tardy shipment of spring orders. There is enough work to be done and manufacturers and quarry owners are looking expectantly for more congenial weather. Should the elements condescend to be more propitious in the near future, the first week in March should see a bustle along every line of trade.

BARRE.

BARRE, VT., February 25.—Barre is in the hands of the weather man and he has not been inclined to permit much work so far this winter, but while the weather has prevented active operation on the outside all the manufacturers have been getting things in shape to make business hum when the weather man does take a notion to permit continuous work.

The Granite Quarry Owners' Association held its annual meeting and banquet the past month and elected officers as follows:

President, Donald Smith; vice president, George Gray; treasurer, John E. Smith; secretary, Wm. Barclay, Jr.; executive committee, the above officers and George B. Milne, George Mutch and Alexander Milne; house committee, James M. Boutwell, Hugh J. M. Jones and J. E. Smith; auditors, Wm. Marr and J. W. McDonald.

The Higman stone shed has been purchased by Hoyt & Lebourveau. This firm has been operating at another point, but increased business made more space necessary and hence this change. The shed will be enlarged and equipped with up-to-date apparatus.

F. D. Cutler and Wallace Carrick, of McDonald, Cutler & Co. went to Syracuse, N. Y., the past month to look after the moving of a hundred ton boulder from Split Rock to Oakwood cemetery, a distance of eight miles, for which the above firm had a contract. It is said that they met with considerable opposition on the part of the citizens along the highway and city officials who refused to let them pass over the briages until they gave bond in case of damage the heavy load might cause.

Matheson, McIver & Co. have erected in their quarry one of the largest derricks of the district. The derrick stands 110 feet high from the base and has a lifting capacity of 50 tons.

Steven & Gerrard are preparing to build additions to their plant.

A Pirie has been installed in the plants of Barclay Bros., thus carrying out a plan for demonstrating the merits of this new tool which the manufacturers' association have had in hand for some little time. This machine promises to be quite a factor in the granite industry, and may help to solve the problem of reducing the cost of granite.

Our Travelers.

The Way Things Seem to a Newspaper Man When He is Out Among the Trade.

VISITING THE TRADE.

A Little Scout Among Southern Ohio Retail Builders' Supply Dealers.

Nearly all of those called upon reported business pretty slack. All, however, felt this was due almost entirely to the long period of severe weather this winter; and all look forward to a good trade just as soon as things open up in the spring. There is some construction work contemplated for spring and summer in almost every town or city visited. The attitude of the supply man in this section is mainly cheerful and hopeful. Conditions seem a little better in Southwest Ohio than they do in Southeast Ohio.

At Cincinnati, Ohio, one of the first things to attract my attention in the Queen City was the up-to-date and progressive methods for the display of their wares of The L. H. McCammon Bros. Co., in the Johnson Building. This firm is the distributing agent for Cincinnati, of the Hydraulic Press Brick Co., which has plants all over the United States, and in consequence makes a great variety of pressed brick.

WHERE MODERN IDEAS PREVAIL.

On either side of the office there are panels of brick laid up so as to show the different kind of brick and how they appear when laid up in different colors of mortar. The mortar is supplied by pasteboard smoothly cut and painted to represent the colors of mortar desired, and the resemblance is so close that unless you pick up a brick and see it is loose you think it is laid in mortar.

Aside from this they go to considerable expense to get good photographs of the finest buildings, put up with the different kinds of brick and have quite a collection on hand for the prospective builder to examine. This office is a place where every architect in the community should go with his prospective client. It gives the client some idea of what he is getting. Mr. McCammon assured me that the architect and his client, as well as all other visitors, were welcome at all times.

With Walter McCammon as a pilot, I started out not to do the town nor see the sights, but to see a few of the yards and warehouses in the city.

If you have any interest in building supply yards tell the elevator man in the Johnson Building to let you off at 312, and the McCammon boys will show you a good one. Until about six months ago their yards were at Sixth and Carr Streets, on leased property which was suddenly vacated, and as a result they purchased a good site with good rail facilities, at Harrison and Western Avenues, and in the short time they have had to work on it, have put in good shape, having a building already on the property 60x120. They built a freight house additional 25x150, and will add to this in the near future, building a concrete house for the storage of quick lime. The freight house is so arranged that goods come in at car floor level on one side and go out at wagon level on the other side, for the first floor, with good facilities for getting material to and from the second floor. On the other side of the roadway which taps the freight house you can find every size and shape of sewer pipe, the product of the American Sewer Pipe Co., each carefully piled and classified so you can get at them readily.

A WELL ARRANGED WAREHOUSE.

The warehouse is so arranged that all material is stored at wagon level also, and with switching facilities from four railroads, plenty of room and a well planned plant, there is no reason why this firm should not handle material cheaply.

This company originally started as L. H. McCammon, agent of the Calumet Fire Clay Co., Calumet, Jefferson County, Ohio, in the spring of 1879. Upon his being appointed as general manager of The Globe Sewer Pipe Co., with offices at Pittsburg, the business was left in charge of George W. and W. S. McCammon.

Upon his death in California in March, 1891, the business was conducted by them, and in connection C. E. McCammon, long connected in the lumber business as Thos. Gilpin & Co., became a member of the firm, known as L. H. McCammon Bros., to handle lumber with their other business.

You have heard of the Kentucky Colonel and the Southern hospitality. If you visit McCammon Bros. you wil feel you do not need to cross the river to get it.

WHERE THE HORSE IS QUITE A FACTOR.

I called on J. H. Conklin on Gilbert Avenue, but was unfortunate enough to find him out. But I learned that he handled a good deal of out-of-the-city business in carload lots, etc. The office force reported that while they were busy just now, they had had their quiet times and were glad of an opportunity to exercise their horses. The horse is a strong factor here, since the railway does not tap this yard.

Knowing what a busy man W. W. Coney, of the Coney Supply Co., 1434 Main Street is, I called up and arranged for an interview.

A PAIR OF HUSTLERS.

When I asked Willie how business was, he began throwing sewer pipe at me. Knowing his angelic disposition, although he did not say anything, I concluded business was not as good as he would like to see it. I am sure, however, that any one, that does as much hustling as he does, has his share, if not more.

Lawson Moores, of the Moores Lime Co., 1511 Union Trust Building (high and dry), says he is willing to see the ROCK PRODUCTS fellows at close range only about three times a year, but will always answer over long-distance phone. When crowded hard over the phone he admitted that if it came to a show down and some one had to have a bushel or two of lime, he culd keep his men up late and do a little more business.

A corner in the office of L. H. McCammon Bros., Co., Cincinnati, Ohio. C. E. McCammon on right and Walter McCammon on left. Note display of brick set up in panels in back.

A GOOD STONE CUTTING PLANT.

I told Walter I wanted to see a good cut stone plant in his city, and he steered me into Mr. Geo. Hummel, manager of The David Hummel Building Co., on Spring Grove Avenue.

If you want to see a clean, neat and handy plant, with machinery for everything that can be handled that way, this is the place. There is an air of order and neatness about this plant that I have seen in no other cut stone plant. There are four gangs of New Albany saws and two Lincoln Iron Works planers at this plant.

KENTUCKY FREESTONE.

The Kentucky Freestone Co., in which The Messrs. Hummel are interested, has its main offices in the same building. The Freestone company is operating six gangs of saws near the quarry at Hummels, Ky.

I saw some of this stone being worked and was surprised to see how sharp the details of any design could be made. This is no doubt due to the extremely fine grain of this stone, which is accompanied by considerable toughness, so it does not spall under the carving tools.

Another good fellow we met in Cincinnati was Harry Richter, the electrical contractor, located at Fourth and Plum Streets. He seems to hold a mascot so far as slot machines go. When you see him give a penny and a slot machine and he will buy for the crowd.

AN EVENING OFF.

Mr. Shepherley, of the Metropolitan Brick Co., Canton, Ohio; Mr. Riley, of the Logan Paving Block Co., and George J. Schwartz, of Milwaukee, Wis., all landed in Cincinnati not many weeks ago, and met Walter McCammon, who, being a good fellow, took them out to dinner. The wine must have been fine since all lost something before they went home. However, I think Riley suffered most, since he says he lost his front seat in heaven, because it was Friday and there were seven different kinds of meat on the table in front of him.

CONCRETE AND COMPOSITION.

Mr. Chas. V. Maescher, 614 Hunt Street, concrete contractor, says concrete work is at a standstill and will be until warmer weather comes.

Mr. Dick Witt, of Witt & Brown, 215 West Third Street, who lay all kinds of roofing, says that the tendency in roofing seems to be to lay on large work, mainly composition roofing of some sort, such as ready composit roofing or asphalt and gravel. They have recently put on some with a 10-year guarantee. They predict a good year for 1904.

WITH THE DAYTON BOYS.

Dayton, Ohio, seems to have gotten the concrete block fever.

Aside from J. B. Cotton, who is making a Salem, or block machine, there are three others making block and another contemplating entering the field. Those who have machines are The Dayton Cement Block Co., 535 North Stilter Avenue; John Strickmaker and Crouch Co.; Dayton Asphalt Roofing and Paving Co., Third, near Canal, and F. J. Celarius.

The Dayton Asphalt Roofing and Paving Co., report the roofing business very slow in Dayton now, but have some good work in sight for summer.

Schaeffer & Gengnagel, the firm which is furnishing the cement for the new concrete bridge which is to go in this summer, report local business slow, but they are hustlers and have been placing some good cement orders outside of the city.

A HEALTHY YOUNGSTER.

This firm is a comparatively young one, being but three years old next April. It consists of C. W. Schaeffer, who was with C. A. Star, the builders' material man, for seventeen years, and Geo. H. Gengnagel, who had been with the Western Union Telegraph Co., at Dayton, for many years. They put in an entirely new yard and handle coal as well as building material. The business prospered so well that last summer Mr. Gengnagel felt he could afford to become a benedict. The yard and office is located on the C. H. & D. R. R.

A PIONEER IN CONCRETE WORK.

Mr. John Eichelberger, of T. D. Eichelberger & Sons, met me with a smile and some good cigars. He reports everything fine but business quiet.

In talking about hollow concrete block, Mr. Eichelberger said he guessed they had been pioneers in Dayton since they made concrete sewer pipe for many years, and that was one of his first experiences in the supply business. For a long while they made a 12-inch pipe for lining walls drilled or bored to a 12-inch hole. He says the vitrified sewer pipe got down to such a price that there was no profit in concrete pipe, so they quit making it. He has faith in concrete block and would likely go into the business did he not believe so strongly that the building material man should sell material and not manufacture it, and this is the right view to take of it.

A STOP AT SPRINGFIELD.

The building supply dealers here all handle coal, so owing to the severity of the winter, these people have not felt the slacking off in the supply line, as they have all kept their teams busy hauling coal.

Office of Schaeffer & Gengnagel, Dayton, Ohio.

The Springfield Ice and Coal Co. have been making some improvements in one of their largest yards and expect before a great while to consolidate their offices at this point.

Mr. Williams, of Ulrich & Williams, says there is considerable contract work in sight in the State, but laments the fact that there are so many beginners in the business who do not know what it costs to do a job until they have suffered several losses, which makes it hard for any one to get desirable work at reasonable prices.

Mr. Mills, of Mills Bros., who has been South for his health, has returned and finds the chilly climate up here does not agree with him any too well.

At Columbus, Ohio, Mr. Ferris, of Ferris Mortar Works, who has been on a pleasure trip to California, is still out of the city.

MEN OF SAND.

The American Sand Co., with office 24 Columbia block, Columbus, are making some improvements in their property at Dundee, Ohio. They are adding a No. 5 McCully gyratory crusher made at Milwaukee, Wis., as an auxiliary to the rools which have already been in use at their plant. The rolls were designed by the company. Mr. A. C. Downard, manager, expect that the addition of the crusher will double the output. The sand produced is a hard quartz suitable for steel casting, etc.

Mr. W. H. Allman, of Massillon, Ohio, has incorporated under the name of the Dundee Silica Sand Co., and put in a new and up-to-date plant at Dundee. The plant is fully equipped and was recently started up. A No. 6 Austin crusher was installed at this plant. Mr. Allman's neighbors and competitors say that he has a very nice mill.

PROGRESSIVE IN CLAY PRODUCTS.

R. Stanley Rhodes, the popular Columbus Sewer Pipe Co. man, has proof that he is a progressive American citizen. A brand new boy came to his home the latter part of February. Stanley says just wait till he is a little bigger and he will show you how to sell concrete block machines.

Mr. R. C. Newhouse, who was formerly with C. Casperis, is now the man behind the desk at the American Art Tile Co.'s plant on W. Broad Street.

A NEW BLOCK MACHINE.

Mr. A. Hamilton, of the firm of Hamilton & Parker, on Naughten Street, has gone to San Antonio, Texas, to recuperate, he having been in ill health for some time.

Mr. A. Hamilton and Mr. L. B. Cooke, of Columbus, Ohio, Naughten Street, have purchased the patents recently procured by Lee J. Dumn for machinery to manufacture concrete block and brick. The machine is designed to make 4 blocks or 96 brick at one time. They expect to have the machine on the market in the near future.

Both Mr. Dodds, manager of The W. C. Townsend Co., and Mr. Harris, of Harris Bros., report things very quiet in the bilding line in Zanesville, Ohio.

Mr. Quieser, manager Ohio Pressed Brick Co., Zanesville, Ohio, says business could be better but he looks forward to heavy spring business. When you see him ask him what he thinks about sand-lime brick.

HARDWARE AND BUILDERS' SUPPLIES

The T. & A. Rodgers Hardware Co., of Barnesville, carry a full line of builders' supplies, every thing that goes into a building, from a shingle nail up, lime, cement, plaster, hair, lumber, etc.

The Cambridge Roofing Co., of Cambridge, Ohio, report things very quiet in their line, but some good contracts are in sight.

THE ALLEGHENY QUARRIES.

At Lancaster, Ohio, on a part of the well known Hocking Valley ledge, are located what is known as the Allegheny quarries. They are on the line of the Cincinnati & Muskingum Valley R. R., operated by the Pennsylvania Co., and are therefore accessible at low freight rates to all points. Tracks extend into the quarries, and facilities are provided for loading twenty-one cars without switching.

A working face, one quarter of a mile in extent, and 53 feet high, has been opened, and is covered by the sweep of the booms of 23 power derricks. An Ingersoll-Sergeant air compressor is in use. Tests made by M. J. Becker, chief engineer for P. C. C. & St. L. R. R., show the crushing strength of this stone to be on one sample 5,950 pounds per square inch; on another, 6,760 pounds per square inch.

Office of J. P. Carlile, Columbus, Ohio.

CHEMICAL ANALYSES OF THE STONE.

Chemical tests made by the late Hugo Blanck, a prominent chemist of Pittsburg, Pa., were reported by him as follows:

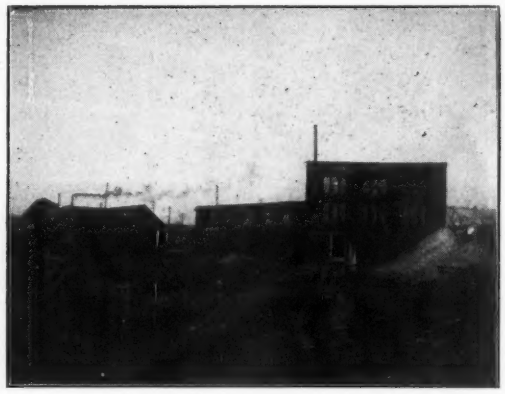
	The Yellow (No. 1.)	Pale (No. 2.)
Silica	96.822	97.762
Alumina	0.505	0.731
Oxide of Iron	0.670	0.510
Lime	0.040	0.122
Magnesia	0.005	0.003
Water	1.281	0.511

Actual weight, 163.1 pounds per cubic foot; commercial calculation based on 140 pounds for cut stone and 155 pounds for rough stone.

3,800 pounds cut stone and 4,200 pounds rough per cubic yard.

Absorption, 5.77 per cent.

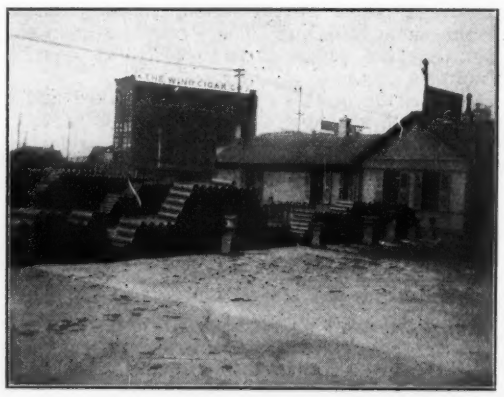
This stone has been quarried for many years and is well known in central Ohio as the F. E. Neeb property.



Plant of the Rock Plaster Co., Columbus, Ohio.

After the death of Mr. Neeb a few years ago, the quarries were idle for some time. They are now being operated by Mr. G. S. Frambes, of Columbus, Ohio, 75 South High Street. Fully $15,000.00 has been spent on improvements in the last year.

A Williams mill is now being installed under the direction of Manager L. W. Barron and Supt. William Strachan. Mr. Frambes is increasing facilities for the reduction to sand, because he is going to make a specialty of producing sand for all purposes. The analyses suggest that this would be an excellent fire sand. The rail and natural facilities are such on this property that sand should be produced at a low cost, and possibly it might be worth while for the sand-lime brick men to investigate it.



Office of the Columbus Sewer Pipe Co., Columbus, Ohio.

SHORT STOPS IN OHIO.

The L. C. Haines Stone Factory, Cambridge, Ohio, equipped with the H. S. Palmer block machine, has a nice stock of block on hand ready for spring trade, and were busily engaged in getting in a large supply of cement and in making up a number of concrete monument bases. This firm is making a good many fancy window sills and door steps also.

The condition of trade with the Ohio Valley Storage Co., of Steubenville, Ohio, seems to be much the same as reported for other Ohio river towns.

IN THE SMOKY CITY.

The American Cement Tile Co. have a unique exhibit in their office at 208 Wood Street, Pittsburg, Pa. This consists of a shed roof laid up complete, consisting of concrete tile about 2 feet by 4 feet, laid up on about 6-inch angle iron as a support for the joints, thus eliminating sheeting, and gives a fire proof roof.

The Pittsburg Monumental Works, 32d Street, report business fine last winter and expect to soon put a few more men to work.

Both Hepenstall & Marquis and Houston Bros., both on 32d Street, near Liberty Avenue, report that this winter has been a record breaker for quiet business. Yet when I called Jesse Hoss, of Houston Bros., was up to his neck in work.

W. T. Leggit, with offices at Liberty Avenue near Tenth Street, are making some changes. They will soon centralize their yards at 26th and Liberty Avenue, and move their offices to the Farmers' National Bank Building. S. V. P.

The Effect of Impurities in Portland Cement Mortar.

We are glad to note that there is some activity along the line of investigation looking toward a determination of the allowable impurities in sands for use in Portland cement mortar.

C. E. Sherman, Prof. civil engineering, Ohio State University, 77 Oak Street, Columbus, Ohio, has published some definite data in the *Engineering News*, November 19, 1903, with reference to the use of or effect of the introduction of clay and loam up to 15 per cent. in Portland cement mortar.

This work was suggested to Mr. Sherman through the difficulty which he had in obtaining a clean, sharp sand for some engineering work in the Yellowstone Park.

The cements used for the experimental work were Dyckerhoff and Lehigh Portland cement, as representing types of imported and domestic Portland cements.

The cements were both carefully examined for fineness of grinding, quality, etc.

One fact brought out by this examination is worthy of note, and that is, that the fineness of grinding was materially in favor of the American cement.

Dyckerhoff, 18.4 per cent. remained upon a 200-mesh sieve, while only 13 per cent. of the American cement remained upon a 200-mesh sieve.

Three kinds of sand were used: lake sand weighing 105 pounds to the cubic foot, with voids amounting to 40 per cent.; bank sand weighing 102 pounds per cubic foot, voids 40 per cent.; and the other was the standard sand of the American Society of Civil Engineers. A ball clay was used to supply and the clay and loam were obtained from the State University grounds, one part of the cement to three of sand, and where clay or loam was used, it was taken as a per cent. of sand.

The conditions necessary for the best development of strength were maintained throughout, and aside from the introduction of known impurities, as indicated, all conditions were maintained as nearly parallel as possible. One point brought out was this: that the clay and loam seemed to act as a retarder to the setting up of the cement so that it was necessary to allow the briquettes to remain in the air forty-eight hours before being put in water.

The author states that clay and loam up to 15 per cent. is entirely safe, since experimental work was carried out through an entire year, and at the end of the year no evidence of weakness had developed.

The writer is satisfied that time and money spent in washing sand for Portland cement concrete is wasted, and that the importing of lake sand, frequently specified is often unnecessary. The effect of a clean aggregate is of much more importance, especially for the concrete which may be subjected to a tensil stress.

Lime.

The National Lime Manufacturers' Association.

Meets Semi-Annually.

CHAS. WARNER .....President.
Chas. Warner Co., Wilmington, Del.
PETER MARTIN .....First Vice President.
Western Lime Co., Huntington, Ind.
O. F. PERRY .....Second Vice President.
Rockland-Rockport Lime Co., New York City.
W. B. HILL .....Third Vice President.
Ash Grove Lime Association, Kansas City, Mo.
C. W. S. COBB .....Treasurer.
Glencoe Lime & Cement Co., St. Louis, Mo.
E. H. DEFEBAUGH.....Secretary.
ROCK PRODUCTS, Louisville, Ky.

Official Organ, ROCK PRODUCTS.

The Unit of Measure.

There has been some confusion in the lime trade in times past, owing to the different basis or unit of measure in figuring lime, and to wipe out this confusion and simplify the matter of making prices on lime, the National Lime Manufacturers' Association has had the subject up and it is on record as being in favor of adopting 100 pounds as a unit of measure instead of the bushel. The adoption of the 100-pound unit as the standard will certainly simplify matters and put every lime man on an equal footing when it comes to figuring prices on lime, but to get the full benefit of such a standard it is essential that it be universally adopted.

Following the meeting at Pittsburg, which declared the 100-pound as the unit of measure, we have sent out letters to the trade asking for an expression on the subject, at the same time urging the advisability of adopting by unanimous consent 100 pounds as the unit of measure in selling lime.

We are pleased to note that this meets with approval of practically the whole trade, and we think that the few dissenters in the trade will reconsider their objections when they see how overwhelming the majority is in favor of this standard.

Some of the expressions from the trade are given herewith:

Bushel Quotations Go to the Waste Basket.

Mr. J. T. Bloomer, president of The New York Lime Co., New York City, says: Replying to your favor of February 10, referring to the matter of handling lime in bulk by bushel, we have been handling lime for the past thirty years in bulk in bags and in barrels, but as yet we have never sold any lime by the bushel, neither have we received or bought lime by the bushel. We do received or bought by the bushel. We do receive a great many quotations from lime burners for lime by the bushel, but they generally find our way into our waste basket. We trust that you would suggest in your paper the sale of lime by the 100 pounds, or by the ton only, and as you stated, it is a better way for both manufacturers and dealers. We manufacture and sell powdered lime refined, both slaked and quick, which we have been shipping to various parts of the world for a number of years. Limes of very high grade in a powdered form, especially adapted for the manufacturing purposes, we have sold as high as $1.00 per pound; however, that of course is an extremely high price for neutralized lime, prepared for special purposes."

Michigan People Favor the 100-pound Unit.

Morgan Curtis, manager of the Michigan Lime Co., Petoskey, Mich., says: "We wish to state that we have always sold our lime in bulk at so much per cwt. or a barrel, being 200 pounds actual weight. The writer attended a meeting of the different local manufacturers of lime in this section and all were in favor of this unit of measure; in fact, we would not care to sell on any other basis."

Do Not Bother With the Bushel.

The Leicester Marble Lime Co., Leicester Junction, Vt.—"In regard to the lime in bulk, we always weigh it and make price by the 100 pounds or ton. Do not know of any lime manufacturer in this section that uses the bushel measure. When a local customer wants a bushel of lime we weigh him out 80 pounds. We would not bother with any measure and never did."

Thinks the Size of Lumps Cuts Some Figure.

Herman C. Palmey, New Haven, Conn.—"Would say regarding the sale of lime by weight or measure, the profit of the manufacturer would depend upon the size of lumps to be sold. If it was fine lime, he would gain by the weight method, but if the lime was all in coarse lumps it would be more profitable to sell by measure. My unit of sale has been the barrel, supposed to hold 200 pounds, but varying according to size of lime. When selling large quantities in bulk it has been by weight at the rate of 200 pounds per barrel, and 10 barrels to the ton."

Sell Some by the Bushel for Convenience.

Charles Williams & Co., Bigelow, N. Y.—"We have been selling lime for thirty years by the 100 pound to dealers, but to consumers or to teams for near-by trade, by measure or bushel. We do this way for convenience sake."

Uses Bushel But Prefers Weight.

S. O. Miller, Thomasville, York County, Pa.—"I sell principally by the bushel, rating 80 pounds to the bushel, although I would prefer selling all my lime by the hundred pounds or ton of 2,000 pounds."

Can't See the Good In It.

The Adams & Duford Co., Chaumont, N. Y.—"It is our custom to retail lime by the bushel, weighing it up at 70 pounds per bushel. In carload shipments our bulk lime is sold by the ton and our barrel lime by the barrel. In retailing lime we would be willing to change our method and sell by the cwt. if we could see any object in doing so, but we confess that there are no advantages in such method apparent to us at the present time."

Are Tired of the Bushel.

Alfred J. Clader, Allentown, Pa.—"I am, as well as the other parties engaged in the business in this section, selling lime by the bushel. We are all very tired of doing so, but so far have been unable to adopt a better way. I do not know why the selling of lime by the 100 pounds should not be an improvement over the old way. My trouble at present is the cost of making lime—the great question to me is how I can make a strictly up-to-date article with the least cost."

Have an 80-pound Bushel.

The John W. Tabler Lime and Stone Co., Frederick, Md.—"We sell our lime in bulk on an 80-pound basis to the bushel. It might be a difficult matter to break away from this custom."

Have Adopted Weighing in Canada.

The City Lime Works or Guelph, Guelph, Ont., Canada.—"The lime producers of Ontario have for a considerable time been selling by weight. It was found that measure was a loss, so by mutual agreement the weight system was adopted, and has proved a most satisfactory thing, I think to all concerned. The buyer knows how much he gets and can govern himself accordingly."

Another Vote from Canada.

D. D. Christi, Guelph, Ont., Canada.—"I regret that I could not be with you at the annual meeting of the National Lime Manufacturers' Association in Pittsburg last month. However, I was much pleased to learn from the reports that the association has agreed to sell lime by the weight instead of the bushel or barrel, and for your encouragement, I here repeat what I said at your organization meeting in Indianapolis, last year, that the lime manufacturers of Ontario, Canada, have sold their output of lime by the 100 pounds for the last three years and are much pleased with the result."

Is With the Association.

The Walnut Grove Lime Co., Walnut Grove, Mo.—"I am entirely with the association on the weight unit. Think it would be a good move and am willing to adopt it any time. However, I am getting old enough to quit on new ideas, and I want to sell out to some one with more advanced ideas."

The California Barrel is 220 Pounds.

The Union Lime Co., Los Angeles, Cal.—"We sell our lime by the ton when sold in bulk, and by the pound when in barrels. A barrel of net lime in this State by usage is 220 pounds. We think lime should be sold by 100-pound in bulk."

Not Sold by the Bushel on the Pacific Coast.

Henry Cowell Lime and Cement Co., 211 and 213 Drumm Street, San Francisco, Cal.—"On the Pacific Coast lime has never been sold by the bushel. It is sold in barrels by the barrel, a barrel of lime having no special weight, but running 230 to 250 pounds gross. When sold in bulk it is always sold by the ton or two thousand punds."

Feels Out of Touch With Eastern Methods.

J. E. Williams, Cascade Lime Works, Great Falls, Mont.—"I sell all of my lime by the pound or ton, but believe that all of the firms sell by the bushel in Montana. While my lime is very heavy, I would gain by the bushel, as I can not get but 70 pounds lump lime in a bushel. Not being acquainted with your ways and customs I could not give an intelligent suggestion. I have been so long in the West that I have but little idea of methods and improvements in the East, and the rapidly changing ways and new ideas. We do not feel as though we were in the same country."

Use the Barrel as a Unit in Washington.

The Washington Brick, Lime and Manufacturing Co., Spokane, Wash.—"Our unit of measure for lime is a barrel, which is understood to be 200 pounds, whether sold in bulk, sacks or barrels. For our local trade we sell it in sacks, 100 pounds to the sack, and two sacks equal a barrel, and we sell a barrel of lime, the weight of which is 200 pounds gross, and our bulk lime is sold 200 pounds to the barrel."

Have Always Sold Per 100 Pounds.

The Anniston (Ala.) Lime and Stone Co.—"We have always sold our lime in bulk of 100 pounds, and not by the bushel. Trusting this information will be satisfactory."

Where They Have Two Kinds of Barrels.

The Lagarde Lime and Stone Co., Anniston, Ala. "It is not only our custom, but the practice in the South, to sell lime on a basis of 200 pounds bulk per barrel, and when in cooperage, a small barrel to weigh 180 pounds gross, and standard barrel 200 pounds gross. The bushel method is not in vogue here, and I am of the opinion that a uniform measure of pounds, such as mentioned above, is not only more satisfactory to the trade, but infinitely more so to the manufacturer."

Don't Favor Bulk Lime at All.

The Ocala (Fla.) Lime Co—"We handle but very little lime in bulk, few cars being shipped this way. During the year 1903 we shipped only about half a dozen cars all told. The Florida trade prefers lime in barrels being more convenient to handle and to store, also for re-shipping. Barrels being cheap, has also a tendency of favoring lime in packages. We don't favor lime in bulk, either by measure or weight."

By Weight is the Only Fair Way for All.

Rockland Lime Co., Rockland, Me.—"We have for a number of years quoted bulk lime on a basis of one hundred pounds. We could do nothing else, and be fair with all our trade. If sold by the bushel the weight would vary so very much our trade would not be satisfied. A bushel of fine lime would weigh 25 per cent. more than a bushel of what we call lump lime in the East. We are of the opinion the only fair way to protect all your customers would be to quote bulk lime by the 100-pound weight. We have no suggestions to offer, but in closing must add that we welcome and appreciate the work of ROCK PRODUCTS, and if we can serve you in this part of the country, we will be glad to do so."

Have the Proper and Only Fair Way in Practice.

The Ontario Lime Association, Toronto, Ont., Canada.—"We have sold lime in bulk by the hundred pounds, both wholesale and retail, for the past five years, and are convinced that it is the proper and only fair way of selling."

Are Ready to Change from the Bushel.

E. F. Perry, secretary of the Colorado Lime and Fluxing Co., and The Leadville Lime and Fluxing Co., Denver, Col.—"Our lime sales are all based on the bushel unit, but think your idea of changing the unit of measure to 100 pounds a good one, and we are ready to adopt it."

Have Car Scales and Weigh all Lime.

D. Robertson & Co., Toronto, Ont., Canada.—"We beg to advise that we have been during the past three or four years, selling our lime at a rate per 100 pounds. We find this much more satisfactory than the old plan of selling per bushel. We have at our kilns a railroad track scale, capacity 50

tons. The railroad car is run on the scale, tare is taken, then scale is set to weight, car is to be loaded. With regard to local or call trade, we sell at a price per bushel, but to get at the number of bushels on the wagon, it is weighed 75 pounds to a bushel, so that all our output is sold by weight. We would not care to go back to the old plan of measuring."

Want a Uniform Barrel, Too.

The Moore Lime Co., Richmond, Va.—"We have been in the business of manufacturing lime now over twenty years and we have never sold our lime except by the 100 pounds. We have never given a quotation by the bushel. I hope that all of the manufacturers in the country will adopt the 100 pounds standard. I would also like to see a uniform standard size barrel adopted. The Virginia lime companies are now using a barrel 16-inch head and 27½-inch staves, but a great many of the barrels through the country are of different sizes. I think it is as important to have a uniform size barrel as it is to have a uniform weight."

A 300-pound Barrel.

The A. & M. Barnes Lime Co., Sheffield, Mass.—"We sell all our lime by weight, 300 pounds in a barrel, and bulk lime by the net ton."

Prefers the 200-pound Barrel.

P. McKinlay, Garfield, Ark.—"What lime we ship in bulk we sell per barrel of 200 pounds scale weight. What lime we ship in barrels we sell so much per barrel. The barrel contains about 185 pounds of lime and the barrel weighs about 15 pounds and both together 200 pounds, which makes it very convenient for figuring freight. We sell very little lime at the kiln, what we do, is sold on the same basis as above. We do not weigh every coopered barrel, but weigh some every day picked out at random to see how they run. We weigh all the bulk, changing scale weights. I prefer our present method to selling by the 100 pound unit."

Thinks the 100-pound Basis Would be More Agreeable.

The Rockbridge Lime and Stone Co., Lexington, Va.—"We advocate and favor selling our lime on the 100 pound basis rather than a bushel basis and think it would be more satisfactory to all parties interested if this basis could be agreed upon."

Believes the Weight Unit Will be an Advantage to the Trade.

Horlicks' Lime and Stone Co., Racine, Wis.—"Would say that we think the agreeing upon a unit of measurement of lime will be a good thing, and work advantageously to the trade."

Sell Per 80-pound Barrel.

The Leesburg Lime and Quarry Co., Leesburg, Va.—"We sell our lime only for agricultural purposes, and sell it by the bushel measure. Most of the lime companies here sell by the ton to farmers The standard unit is 80 pounds to a bushel."

Favors Accepting Railroad Weights.

The Imperial Lime Co., Hannibal, Mo.—"We think you are right, that bulk lime should be sold per hundred instead of being sold per bushel or per barrel. Would also suggest that railroad weights be taken as a basis as it will entirely eliminate the question of difference between weights as reported by the manufacturer and as made by the customer. While we are free to admit that railroad weights are not absolutely correct, we have found their average weight to fully equal weights as claimed by us."

Northern Ohio Has a 70-pound Bushel.

The Ohio Lime Co., Toledo, Ohio.—"It has been customary for lime manufacturers of Northern Ohio to sell lump lime by the bushel, figuring 70 pounds to the bushel, and invoicing same per bushel rather than by the hundred pounds. The trade in Michigan, Indiana, Ohio and Pennsylvania seems to demand lime by the bushel. We think there will be no trouble in selling lime by the 100 pounds, should the lime manufacturers agree on that as a unit or weight."

Owens Favors the Cwt.

John D. Owens & Son, Owen, Ohio.—"Would say that the sale of bulk lime by the cwt. would suit our company very much. We think it all folly to reduce lime to bushels if the custom could be established to sell by the cwt."

Need the Weight Unit as an Equalizer.

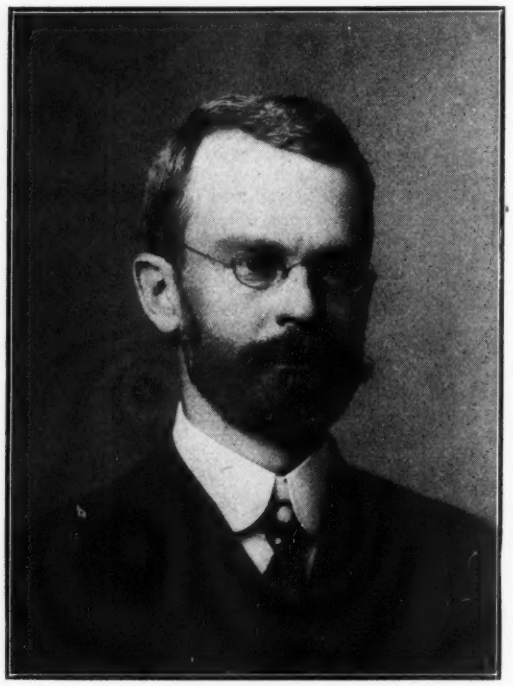
The Wright Lime and Cement Co., Memphis, Tenn.—"We would like very much to have all the dealers in this city agree on a unit of measure in selling bulk lime in local trade; as it is, every firm has their system, which is very poor. We all vary in weight no doubt, as it is sold by the barrel in bulk, using no special size barrel. Supplying lime by the hundred pounds would put every dealer on an equality, and at the same time each customer would receive the same amount of goods from one as the other. We are supposed to sell 200 pounds to a barrel."

Sell in Bulk Only.

The White Oak Fuel Co., El Paso, Tex.—"As we retail no lime and only sell to the dealers, we are perfectly willing to adopt the 100 pounds basis, as we believe it will be found more satisfactory, but as for a more profitable standpoint, we are unprepared to say. All our lime is sold in bulk and we shall continue to do so unless it can be shown it is to our advantage to do otherwise."

The Fire Touched, But Didn't Stop Them.

The Maryland Lime and Cement Co., 1211-1213 South Charles Street, Baltimore, Md., which was among the sufferers by the Baltimore fire, is sending out the following notice to the trade: "Our warehouses on Blowy's Wharf and South Street were destroyed in the great fire, and we would inform you that we have a duplicate stock at the above address (our South Baltimore Branch), and are prepared to ship promptly Lehigh Portland cement, lime, fire brick, sewer pipe, fire clay, chimney pipe, roofing felts, sheathing paper, cement, etc., of which we have a full stock."



PROF. H. J. WHEELER,
Chief of the Rhode Island Agricultural Experiment Station, Kingston, R. I.

EXPERT ON AGRICULTURAL LIMES.

Mr. Wheeler has made a more thorough study of lime based on extensive experiments, so far as its application to agricultural work is concerned, than any man in the country, and his paper read before the lime manufacturers meeting at Philadelphia, Pa., and which is printed in detail in the transactions of that body, is the most thorough and exhaustive contribution to the literature on this subject now in print.

Improvements in Plants of the American Lime & Stone Co.

The American Lime and Stone Co., Tyrone, Pa., are enlarging their hydrating plant to more than double its previous capacity and expect, in a very short time, to be able to ship several carloads of this material daily. They are also enlarging their ground limestone plant and expect to make considerable more at the plant, being remodeled, than was made at two plants previously. At Union Furnace a large ballast plant is being constructed on the gradual reduction plan; two gyratory crushers will be used and revilving screens with belt conveyors. The machinery is already on the ground and the foundation work completed. It is expected that 1,000 tons of ballast will be turned out from this plant daily as soon as spring opens. A large flame kiln is also being constructed at Union Furnace which will likely be fitted up with a gas producer, and this kiln will be made to burn a high magnesium stone or a high caustic stone as the trade may require. This is in addition to the seven kilns which are already in operation at that point.

The Ocala (Fla.) Lime Co. say the demand for lime is good with them and they are running full force.

The Whiteland Lime Works, Devault, Pa., had a fire the past month which destroyed some platforms and did other damage about the place.

S. O. Miller, Thomasville, Pa., says the greater part of his lime is used by iron people as steel flux, but he also has quite a demand for building and white coating lime.

Reports from New York City indicate that C. J. Curtin, E. S. Savage and others, of New York City, have purchased the Farnum Bros. Lime Works, at Cheshire, Mass.

The Leicester Marble Lime Co., Leicester Junction, Vt., says that trade is fair with them for this time of the year and they expect a good run of business the coming season.

The Elliston Lime Co., Elliston, Mont., has closed down its lime kilns for the winter season, but expects to resume operations in the spring with double the former capacity.

The Keystone Lime Works, Pelham, Ala., has increased its capital stock from $25,000.00 to $50,000.00, and put in four new kilns to increase the output to 1,000 barrels of lime a day.

Charles Williams & Co., Bigelow, N. Y., report a good outlook for trade in lime this year. They have a large stock of wood on hand and are ready for business when the weather gets warm enough.

David T. Day, Chief of the Division of Mines and Mineral Resources of the United States Geological Survey, is compiling statistics concerning the number of lime kilns and other information about the lime business.

The Cumberland Stone, Crab Orchard, Tenn., will, in the near future, erect a large lime kiln and will increase facilities as fast as the trade warrants. This section is developed in the line of coal, coke and manufacturing of iron.

The John W. Tabler Lime and Stone Co., Frederick, Md., has lately installed a small stone crushing plant. Speaking of business, they say their lime trade is growing bigger every year and they look for a great business in lime this year.

The Eakle-Wyand Lime Co. has been incorporated at Eakle Mills, Md., with a capital stock of $5,000.00, and will equip a lime plant with a capacity of 100 barrels a day. The incorporators are: O. Eakle, Clarence Eakle and Webster H. Wyand.

The A. & M. Barnes Lime Co., Sheffield, Mass., has recently been incorporated with a capital stock of $60,000.00, and they are at present adding a new kiln and other equipment. The officers of the company are: A. L. Barnes, president; M. A. Barnes, secretary-treasurer; M. F. McCarty, superintendent.

The White Oaks Fuel Co., El Paso, Tex., say that the lime trade is good with them, and were it not for their old-fashioned methods for burning lime they believe they could increase their output to advantage. They are at present investigating the different modern kilns and up-to-date methods and will probably remodel their plant this summer.

The Standard Lime and Stone Co., of Fond du Lac, Wis., has just completed another kiln, making a battery of three large kilns at its new plant near Valders, Wis., with a capacity of 400 barrels of lime daily. The limestone at Valders, they say, is the whitest and purest found in Wisconsin, and closely resembles white marble, as noted by the State Geologist in his annual report.

A new company known as the Superior Lime Co., of Bay Shore, Mich., has been organized at Grand Rapids, Mich., with a capital stock of $30,000.00. The company is said to have purchased 350 acres of limestone land near Petoskey, Mich., on which they will erect two lime kilns. The officers of the company are: George F. Zipp, Grand Rapids, president; A. E. Copedmore, secretary; Homer L. Zipp, treasurer; general manager, Thos. J. Scroggie, Bay Shore.

The Rockbridge Lime and Stone Co., Lexington, Va., has been making improvements during the winter, increasing the capacity of its hydrating plant. These improvements were made necessary by the heavy demand last fall which grew at such a rate that they were unable to supply it. They hope with their increased capacity, however, to be able to take care of their spring trade in good shape. The hydrated lime seems to be quite a winning card with them, and they say their sales last fall exceeded all expectations.

Cement.

Experiments in the Manufacture of Portland Cement.

Prof. E. D. Campbell, of Ann Harbor, Mich., has been at work, aided by a number of assistants during the last two or three years with a view to determining the whys and wherefores of some of the things that take place in Portland cement manufacture. Prof. Campbell and his assistants are all very able men and have had great facilities for research. It may, therefore, be of general interest to briefly review some of his results.

In the experiments on the burning and production of material for determination of the proper burning point, or temperature, a rotary kiln was necessary. A small rotary was built, about eight inches in diameter by thirty-two inches long. It was so arranged that its angle of inclination and speed of rotation could be varied at the will of the operator, as well as the regulation of the fire. The fuel was supplied by gasoline. The temperatures were controlled by Le Chatelier thermocouple. The thermocouple was encased in a porcelain tube and platinum. This minature rotary had a capacity of 600 to 700 grams of clinker per hour. The pyrometer or thermocouple was accurately standardized for all work, and later an experiment was run to determine if the temperatures recorded by the pyrometer were the actual temperatures of the clinker, and some other interesting points obtained.

A few of the results obtained will be given to illustrate this.

Observed temperature. Degree Cent.	Clinker Tem. Degree Cent.	Difference. Degree Cent.
1,000	984	—16
1,200	1.196	— 4
1,300	1,302	-|- 2
1,500	1,513	-|--13

This indicates that the pyrometer readings gave the correct temperature reading for the clinker, at about 1,300 degrees, and at a lower temperature it reads too high, and at a higher temperature, too low. These results were obtained by passing pyrometric cones of known melting point along with small magnesite cubes, and observing the point at which these cones matured, or showed signs of softening and recorded the temperature registered on the gaeraeometer when this took place. Following the large amount of experimental data and discussion in summing up the results of the work published in the *Journal of the American Chemical Society*, Vol. 24, page 969, Mr. Campbell makes the following statement: "Viewed from the standpoint of the influence of chemical composition upon the changes in temperature necessary to produce a sound cement and the temperature at which the clinker will give trouble by sticking in the rotary, we find that:

The minimum temperature necessary to produce Portland cement which will give a perfect pat test from fresh clinker is about 1,450 degrees Cent. This temperature is for a minimum amount of calcium oxide. It increases with increase of calcium oxide until in ordinary commercial cement it reaches 1,550 degrees. With the most heavily limed commercial cements this figure would be somewhat higher. It depends somewhat on the length of time required to pass through the rotary, slow driving tending to lower the temperature. The substitution of Al_2O_3 or Fe_2O_3 for SiO_2, that is, the use of richer clay, lowers the overburning temperature but may lower or raise the temperature required for perfect boiling test. With mixtures low in calcium oxide the burning temperature for perfect boiling test is lowered by this substitution, but with mixtures high in calcium oxide the burning temperature required for boiling test is raised and may become coincident with the overburning temperature.

Any attempt to raise the overburning temperature by increasing the proportion of lime will fail to give a perfect hot test even at the overburning temperature, as illustrated in Experiment 100. This is a confirmation of what manufacturing experience has shown—that with lean clays heavily limed there is a wide margin between the proper clinkering temperature and the overburning temperature, while with rich clays in order to prevent the clinker from balling up, great care must be exercised to maintain the proper clinkering temperature.

Results on later work published by E. D. Campbell and S. Ball, Vol. 25, page 1003, Journal of American Chemical Society, give the results of some tests on the effect of fineness of grinding upon the clinkering of Portland cement. All experiments carried out in the laboratory of the University of Michigan prior to that time had been upon soft marls, and it was thought that perhaps the fineness of the particles might have some material influence on the clinkering. Therefore, through the courtesy of one of the best Lehigh mills, material is furnished, such as is used in the dry process for the manufacture of Portland cement from limestone. Only a few of the points brought out by this work will be given.

The evidence seems to point to the fact that a perfect hot test has been obtained, the time of the initial set decreased with the increased temperature in the manufacture of Portland cement. These parties hope, at a later date, to take up the influence of the temperature within the furnace upon the time of setting as well as upon the other properties of the cement. The silica soluble in hydrochloric acid increases with the increased temperature at which the clinker is produced. Silica soluble in sodium carbonate however, reaches a maximum when burnt at 1,352 degrees. The results seem to indicate that all the original silicates are converted into readily decomposing silicas at a temperature of 1,352 degrees.

The article contains considerable valuable information and is very suggestive as to future lines of investigation.

Some Interesting Data on Cement Burning.

Mr. Joseph W. Richards is in print in Vol. xxvi., No. 1, Journal of the American Chemical Society, with some extremely interesting data with reference to the thermal efficiency of rotary cement kilns. The data was collected at the Dexter Cement Co.'s plants at Nazareth, Pa. The kiln was fired with pulverized bituminous slack coal and the rotary on which the test was made was of the ordinary type 60 feet long by 6 feet exterior diameter. The analysis of materials is given as well as the analyses of the coal used. This kiln was producing an average of 3635 pounds of clinkered cement per hour from 5,580 pounds of mixture fed to it. Producing 200 pounds of flue dust equal to 3.35 per cent of weight of mixture charged. The fuel used was approximately 110 pounds of coal per barrel of cement produced, or two barrels of cement for each 100 kilograms of coal. The temperature of the various gases was observed, the temperature of the clinker and every thing that was necessary for a close calculation of the amount of heat produced.

The heat developed was considered under two heads—the heating power of the fuel—the calorific power of the combination of the raw ingredients forming the clinker. The distribution of the heat under seven heads:

1. Heat in the hot clinker.
2. Heat in chimney gases as sensible heat.
3. Heat in flue dust as sensible heat.
4. Heat lost by imperfect combustion.
5. Heat required to expel the moisture from the charge.
6. Heat required to expel carbonic acid from carbonates.
7. Heat lost by radiation and reduction (by difference).

The heat of the formation of the clinker due to the chemical union of the raw constituents when brought to the kindling temperature or the temperature at which it is possible for them to combine. Prior to this but little attention has been given to this heat of formation, although it is considerable.

1. This heat of combustion is equal to 18 per cent. of the heat developed by the combustion of the coal, and is therefore an item which can not be neglected in heat calculations.

2. The heat in the clinker was only about one-tenth of that developed in the kiln, which fact shows low efficiency in the use of fuel and indicates room for much improvement. The heat carried out by combustion and the excess of air is fully three-fourths of that developed in the kiln, fully 85 per cent. of the fuel used is consumed and allowed to go up the chimney. This was the greatest heat loss. If the kiln were twice as long the heat saved would be about 40 per cent. of that produced by the fuel, and if the air admitted were reduced to 80 per cent. excess instead of 132 per cent. excess, as it was in the kilns examined, the heat gained would be considerable. If both economies were practiced at once the saving might amount to about 60 per cent. of the amount of fuel used. The loss by radiation and conduction was small. He further shows that the temperature of the flame, by calculation, was only 1,000 degrees, while the temperature of the clinker was 1,200 degrees. The result of the investigation was such that they suggest the desirability of using not only longer kilns but auxiliary cooling kilns which will extract some of the heat from the clinker, preheat the air preparatory to combustion, as well as a closer regulation of the air excess used, and suggest the desirability of trying to devise some means of extracting at least a portion of the heat which goes out through the flue gases and is lost. There will probably be a limit in length of kilns used on account of mechanical difficulties, which must be confronted in handling such large and heavy pieces of machinery.

Caution to Exporters of Cement to Turkey.

There is a queer story that comes from Turkey about the mixing of the identity of cement and dynamite, which is promising to make trouble for any one who contemplates shipping cement to that country, unless due precautions are taken to establish its identity. A communication from the Turkish minister has been received at the State Department, transmitting a copy of "certain measures just adopted by the Imperial Government, with a view to preventing the smuggling into Turkey of prohibited articles, and particularly of dynamite." Owing to the fact that dynamite is nearly the specific gravity of cement, and that it must, on account of its explosive nature, be packed in boxes or barrels and may be passed as cement and imported in cement barrels without fear of detection, the Imperial Government, in order to prevent such entries, has decided to require that a certificate of origin shall be used by the local authorities at the place of manufacture for shipments of cement to Turkey. While there is no law under which such orders could be enforced in this country, yet it now becomes necessary for exporters of cement to Turkey to take the precaution of furnishing the certificate above referred to, or to have their goods deported on arrival at the ports of the Imperial Government.

The Fatigue of Cement Products.

Some rather interesting data have been furnished by Prof. J. L. Van Ornum, professor of civil engineering, Washington University, St. Louis, Mo., in a paper read October 21, before the American Society of Civil Engineers.

He has been investigating the fatigue of cement products that is experimental work carried out in the laboratory under his direction, to determine if the repeated loading and unloading of blocks of cement and concrete would materially weaken the ultimate strength of the block.

The loads applied were always below that of the crushing strength of a block made at the same time and under the same condition. The load applied and removed varied from 50 to 95 per cent. of the crushing strength in every case. After repeated loading and unloading material weakness was shown in the crushing srength obtained from the blocks which had been under fatigue.

Further work is being done along this line at the present time. Since the curve tends more and more toward a horizontal line sufficient work will demonstrate the proper factor of safety to be used in recommending strengths and dimensions for concrete work.

Hon. Wellington R. Burt and George R. Burt, at Bay City, Mich., have purchased the old Michigan Alkali Co.'s quarry at Bellevue, and it is said they will arrange to construct a Portland cement plant on the property. Chemist O. Burton, formerly with the Hecla Portland Cement Co., at Bay City, has been engaged as chemical engineer.

After March 1, the Bay Shore Lime Co., of Bay Shore, Mich., and the Elk Rapids Portland Cement Co., of Elk Rapids, Mich., will be merged under the name Elk Portland Cement and Lime Co., with general offices at Petoskey, Mich. Mr. E. M. Sly, treasurer of the company, will have charge of the sales of both lime and cement. The Bay Shore plant will be in charge of Mr. Homer Sly, while Mr. F. B. Moore, general manager of the company, will be in active charge at the cement plant.

J. C. Dorrington, of the Dallas-Humboldt Oil Co. is said to be interested in a project to build a cement plant at Chanute, Kan.

The Dexter Portland Cement Co., Nazareth, Pa., has had plans made for the enlargement of its plant, when business justifies it, and they expect to double their output.

The Martins Creek (Pa.) Portland Cement Co. also had a fire, which burned out their office building and laboratory, causing them a good deal of loss, as they had just started up their new 80-foot kilns.

The new plant of the National Portland Cement Co., of Pittsburg, Pa., is about 90 per cent. completed, and is steadily pushing its work, with the intention of starting its kilns not later than the first of April.

The Struthers Portland Cement Co. is one of the new industries in the cement trade that began operations a few months ago at Struthers, Pa. This plant is operated in connection with the Struthers Furnace Co.

The Sandusky Portland Cement Co., which has a plant at Syracuse, Ind., contemplates building an electric freight line of six miles to connect Syracuse and New Paris, Ind., and make connection with the Big Four R. R.

The Delta Cement Co. has been organized to manufacture cement at Mosherville, Mich. The officers of the company are: Wesley Sears, president; David E. Haskins, vice president; Dr. E. R. Espie, secretary-treasurer.

The Edison Portland Cement Co. recently shut down for the purpose of installing two new kilns. These are to be of the same type as their first ones, 150 feet in length, and will have an estimated capacity of 800 to 1,000 barrels per day.

The Pennsylvania Cement Co. had a fire at their new plant near Bath, which they were just starting up, and which burned out their office building, drafting-room and laboratory. The damage outside the plans, amounts to about $5,000.00.

The T. Millen & Co., cement works, Bath, N. Y., have been slowed down to a day run instead of a night and day run. Wages have also been trimmed down a little to help the company to turn out cement at smaller cost, so as to meet the prices of to-day.

The shut-down of the cement plants contemplated by the meeting in New York on December 8, has not been carried out to its full extent. The stocks on hand were small, and almost all of the companies have been manufacturing throughout the winter.

The Engineers' Club, of Philadelphia, Pa., discussed the question of cement and its uses at a recent meeting in that city, and an interesting paper on the subject was read by Mr. W. R. Lesley, of the American Portland Cement Co., which was followed by a general discussion.

The Kendrick Promotion Co., Denver, Col., which concern is the financial agent of the Crescent Land and Cement Co., inform us that they are preparing to build a factory of about 1,000 barrels daily capacity. They are interested not only in the subject of cement, but also in that of artificial stone, and will be glad to have any information on the subject.

The El Cajon Portland Cement Co., Detroit, Mich., held a stockholders' meeting recently and elected officers as follows: G. Brewster Loud, president; Harry Nicholls, vice president; Charles Thompson, second vice president; Ernest O. Knight, secretary; Emery E. Perris, treasurer, and Jonathan Palmer, Jr., counsel. Reports made at this meeting show that the quarries have been opened up, foundations for the plant have been laid, the engine and boilers have been set, and quite a lot of other preparatory work has been completed.

The Toledo (Ohio) Portland Cement Co. held an annual stockholders meeting at Manchester last month and elected directors for the year, and the directors later elected officers as follows: Dr. Wm. Watts, Toledo, president; W. O. Holst, Toledo, vice president; Frederick Steinkohl, Manchester, secretary; John Wuerthner, Manchester, treasurer. The manager of the company, in reporting on the condition of affairs, said that the steel structures of their six large buildings were completed and the work of enclosing was also practically done. Before the end of February they expected to be installing machinery.

For the Retailer.

The National Builders' Supply Association.

Meets Semi-Annually.

OFFICERS:

JOHN A. KLING, Cleveland, Ohio.....President
RICHARD KIND, Toledo, Ohio.....Secretary
J. N. THAYER, Erie, Pa.....Treasurer

EXECUTIVE COMMITTEE:

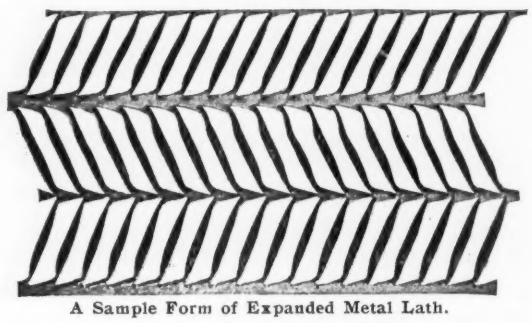
C. H. LITTLE.....Detroit, Mich.
A. B. MEYER.....Indianapolis, Ind.
C. W. S. COBB.....St. Louis, Mo.
FRANK S. WRIGHT.....Chicago, Ill.
D. J. KENNEDY.....Pittsburg, Pa.

Official Organ, ROCK PRODUCTS.

A Timely Suggestion.

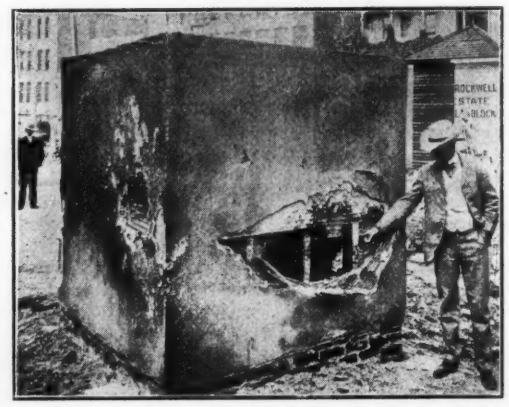
The subject of opportunities has been discussed in these columns heretofore in a general way, in which it has been pointed out that success in the business of retailing builders' supplies frequently hinges on a man's capacity for seeing and taking advantage of opportunities that present themselves.

Right now there is a specific opportunity suggests itself in connection with this business, and that is, the pushing of non-combustible building material. The disastrous fires occurring recently have served to impress the public very forcibly with the advisability of building with something as near fireproof as possible, and the public mind is therefore ripe for suggestions along this line.



A Sample Form of Expanded Metal Lath.

To be specific and take the opportunities one at a time let us take that of metal lath. Aside from the fact that it is non-combustible, it has the advantage of giving the wall greater rigidity and reduces to some extent the amount of space necessary for walls and partitions. The growth in the popularity of expanded metal, while it has been pretty rapid, has been a steady and healthy growth, and to-day there are on the market quite a number of different types and brands. It is probable that the first large usage of metal lath was to make a ground for fireproof walls in some of the larger city buildings, but to-day it is being used in many places as a matter of convenience where there is no attempt at making a fireproof building. Perhaps the most recent use to which this metallic product has been put has been to form a ground for plastered exterior walls or exterior stucco, and a little later exterior cement concrete constructions.



The Structure That Stood the Fire Test at Los Angeles.

There have been very pleasing effects produced in this way. It should not be an extremely expensive form of construction and there is no reason why, if sufficient good cement is used in the concrete, the building should not last well providing the foundations are good.

Out at Los Angeles, Cal., a structure was made recently out of 2x4 studding and steel lath by a Mr. A. L. Haley of that place, to test the fireproof qualities of this form of construction. From reports of the test made we quote the following: "The building was constructed entirely of wood 2x4 studding, 16-inch centers, extending from top to bottom of the frame; the roof was built of boards and this wood structure covered inside and outside with Herringbone Steel Lath; this skeleton structure was then coated with ordinary lime mortar to a thickness of three-fourths of an inch, making a building as here shown, reproduced from photo taken at time of fire. A fire was maintained for one hour with temperature varying from 2,000 to 2,500 degrees. Upon examination after the fire it was found the plaster was as securely locked in the key of the lath as it was before, absolutely undisturbed. The building as a whole was perfectly intact, no bulging of the walls, and the woodwork was not even scorched by the intense heat.

Besides the city's representatives, there were other architects and many interested citizens present. The test was a complete surprise, and many thought the little building would collapse in a very few minutes after the fire was started.

Now, this is only one suggestion out of a number of others that might be brought forward, and what we want to do is to bring out definite ideas and suggestions of this kind in this department from month to month that will help point the retail dealer to ways and means of pushing his business and will also help create a demand for the various materials.

To this end we ask the co-operation of the manufacturers, and will be pleased at all times to hear from the manufacturers and dealers in any kind of building material with any suggestions that the dealers can use in pushing their material to advantage.

Frank Barcus has sold out the lime and cement business at Rochester, Ind., to Marsh Hill.

The Superior Manufacturing Co., Minneapolis, Minn., which deals extensively in building materials, operates a stone crusher, etc., is preparing to spend $100,000.00 in improvements.

The Union Coal, Lime and Cement Co. has been incorporated at Chicago, Ill., with a capital stock of $10,000.00, to deal in building material. The incorporators are: J. O. Heitmann, F. E. Christian and J. F. Cassidy.

The Lake & Risley Co has been incorporated at Pleasantville, N. J., with a capital stock of $10,000.00 to deal in building materials. The incorporators are: Joshua Lake, I. Horton Adams, and G. A. Bourgeois, Jr.

The Western Tile, Mantel and Marble Co. has been incorporated at St. Joseph, Mo., to deal in mantels, tile and building material, with a capital stock of $2,000.00. The incorporators are: George Boone, Jr., Flora Boone and William H. Rogers.

D. W. Osborn has disposed of his interest in the General Supply Co., Oshkosh, Wis. The General Supply Co. deals in sand and building material, and Mr. Osborn was secretary of the company. Other officers of the company are: Julius Kiel, president; G. O. Sanders, treasurer.

A New Plaster Patent.

Patent No. 715,022 granted Samuel B. Chroniger for a plastic compound consisting of fire clay, 100 pounds; calcined gypsum, ground, 200 pounds; slaked lime, 26 pounds; sand, 600 pounds; goats' hair, 100 pounds.

The Western Elyria Wood Plaster Co., Waterloo, Iowa, of which Mr. B. F. Harrison is manager, put in an artificial stone plant for the manufacture of cement blocks by the Stevens system, in connection with their new plaster plant.

Full Report of the Plaster Meeting Held at Buffalo, N. Y., February 4.

A Brief Outline of This Meeting Was Given Last Month, but the Full Report Printed Herewith Gives a Better Idea of the Good Work That is Being Done.

The National Plaster Manufacturers' Association, as you will note in the last issue of ROCK PRODUCTS, met February 4, in the parlor of the Iroquois Hotel, Buffalo, N. Y.

After the session of the directors, President H. E. Dingley called the meeting to order and said: "Gentlemen, I have no set speech, but I am favorable to organization. I believe that profits well earned can be added to the revenue by so doing. I have never attended a meeting that I have not carried away more information than I brought. This has been equally true of this association. One year ago there came together a number of earnest men. The co-operation of the important factors of the business are apparently needed from the attendance. In response to your request, the largest factor in the business favored the association and joined with us. We regret to note that they are not with us to-day. They have the largest benefits to be gained from organization, but I feel that this is the preliminary stage in our history and we have not reached the where we can get the most good yet. We need a larger membership and then we can expect greater returns if the earnest men in the business will add their co-operation.

"One of the objects of this association is for better acquaintance, which always means better results. By exchange of ideas we find our neighbors have wings instead of horns. I am personally glad to say that a warmer friendship has grown up among some of those whom I have met at these meetings.

"Of the questions deliberated on in the past, you can cite, for instance, the bag question. We had the pleasure of a good talk from practical men like Treasurer Forrester at our last meeting, and we know that all were benefited thereby. It seems to me that much good could be accomplished by the elimination of bad accounts and improving our credits by comparing notes and experiences. There are many matters of special interest and we can help ourselves by hearty co-operation. It means however, that we must stand as a man and work to the betterment of the business. While the increase in membership has not been so great, and our secretary seems to be discouraged, I do not think there is any reason for this. In the first two years of an organization in which I was formerly the increase was only 15 per cent., but in five years we had 97 per cent. of the people interested in our line of trade. If we will buckle on the armor of courage and work with a good heart to increase the membership the results will be more favorable than any of us now anticipate. I believe in this organization and with your co-operation there is no reason why this should not be one of the strong organizations in the trade."

The secretary then reviewed the work for the year and expressed regret that while the same methods were applied to this organization as others, the success desired did not attend the effort, but at this meeting he felt more encouraged as to the outcome of this association.

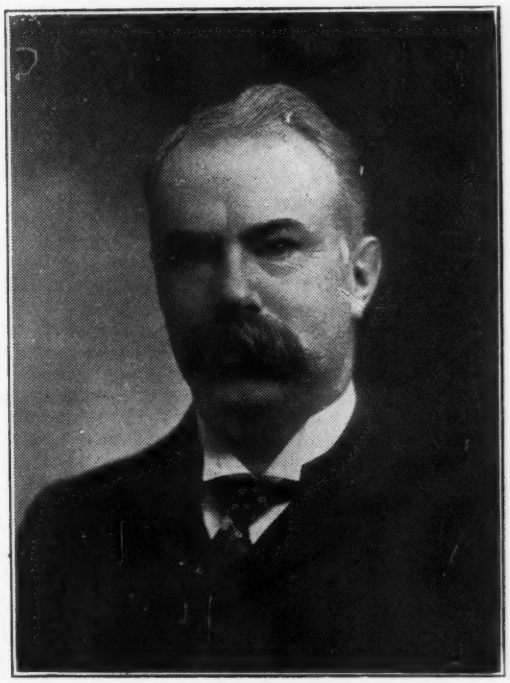
There seemed to be a lack of desire to go a distance to a meeting, but he believed the time would come when manufacturers of plaster will go any distance to attend one of the annual meetings of this association, because the work to be accomplished will no doubt prove the necessity for your personal interest to make this a strong organization.

Treasurer Alexander Forrester being on the sand dunes of Florida, the treasurer's report was made by O. F. Fairman, manager of the Forrester Plaster Co., of Cleveland, which showed a balance on hand in the association and financially in good condition.

Chairman N. J. Ruggles, Columbus, Ohio, of the transportation and classification committee, made his report urging that the association had not taken advantage of the opportunity to work out plans suggested at the first meeting.

The importance of the work was discussed for an hour, the committees were assigned and a general discussion followed as to finding redress from the railroads who, it was declared, were discriminating in classification. The following gentlemen took a hand in the discussion: Messrs. Fishack, of Toledo; Sharp, of Youngstown; Powell, of Toledo, and Elcessor, of Bradford.

Mr. Ruggles, in his talk, said he was glad to say a good word for the association. "I am in favor of it and believe in its object and what may be accomplished by it. I am sure there is no man in the trade who has not a grievance, and if matters are turned over to the committee they will have some reason for action. I hope the membership will give their personal support to the association, and also let the committee know their grievances and the new chairman will then know how to act. I am sure it is not because of lack of troubles that we are indifferent. For instance, in Ohio we have trouble in getting cars, and when a car stands on the track over a certain time we have to pay demurrage. Then we have been troubled with the delivery of cars. It seems to me that this demurrage question is one sided. We must pay, but how about the railroads?"



H. E. DINGLEY, SYRACUSE, N. Y.
President of the National Plaster Mfrs. Association.

He then spoke of the Ohio business association and what was being done in order to take care of freight matters. He illustrated the injustice of the demurrage question by saying: "For instance, if you are in the coal business, you have 96 hours to unload a car, but in the plaster business 24 hours. It seems to me that we are not getting proper treatment in this respect."

Mr. Lauman then said: "This committee should be continued. I believe that if they would take up the matter by working as a committee from the association a change could be secured in the classification from fourth to fifth class."

Mr. Elcessor said that the class on sanded goods should be changed as the railroads got 3 to 1 on the freight in comparison with the neat goods.

Mr. Ruggles: "I have taken the matter up. The railroad men insist that there is as much profit in one as the other, and that is about all the satisfaction you can get."

Mr. Lauman said that he was rather tired of that kind of talk, and he was sure the committee of lime manufacturers in Ohio had gained something by the manipulation of classification.

The chairman then said that a motion would be in order to take up this matter.

Mr. Fishack favored the suggestion of Mr. Elcessor as he knew the railroads got 3 to 1 over neat goods and the matter should be brought before the freight classification committee.

Mr. Sharp: "This matter is of vital importance and a line should be drawn. The present system means the discouragement of neat goods. The railroads get the rates so high that it seems impossible to ship them. I don't want to drive out competition, but it seems to me that we should be placed on the same basis as cement. We have a higher rate and yet we can get more tonnage in a car than cement. However, it is necessary that the classification committee should push this matter."

Mr. Ruggles: "I am glad to hear the remarks on the discrimination in favor of cement. That is what we are here for."

The president came in with one of his trite remarks. He said, "It is agitation that makes butter."

Mr. Sharp: "It is not right for gypsum producers to compete with manufacturers on as low a price. If we had their co-operation we could help each other. Mixers have their rights. The man who sells raw material should not endeavor to come right back at the people. It is not the other goods that I am afraid of, but as far as neat goods are concerned, it is different."

Mr. Fishack remarked that transportation matters were under discussion.

Mr. Marshall asked the question, "How about the Ohio shippers' transportation constitution? Do they interest outsiders? Is it the idea to make a National Shippers' Association?"

In reply Mr. Ruggles said that the grain, sewer pipe, lumber and coal dealers all had their own associations in Ohio, but they co-operated with the national body.

Mr. Elcessor asked the question if the Ohio Shippers' Association employed any one to work out these matters.

Mr. Ruggles said that they had employes but the executive committee did the bulk of the work at this time.

Mr. Marshall suggested that this was a broad field and he thought it would be a good idea for the association to work man to man with them.

Mr. Powell suggested that one of the matters that the Ohio Shippers' Association ought to take up was the question of making the railroads move freight thirty miles each day. This would offset the demurrage question. If we could get the railroad freight agents to recognize this association and put the facts before them we might have some opportunity. As to classification, we have our own sphere and our own salvation to work out.

The chairman then stated that a motion would be in order as to instructions to the committee.

Mr. Elcessor moved that the committee be instructed to take up the classification matters and if desirable to become members of the Ohio Shippers' Association, provided good could be gained, the association to pay the expense.

This was seconded by Mr. Sharp and passed unanimously.

Mr. Marshall then stated he thought the efforts of the association named ought to be more specific. He thought it was too general.

Mr. Dingley said the New York State manufacturers had the same difficulty as those of the West, because of the classification.

Mr. Black suggested that it would be very well to look into the Ohio Shippers' Association, but the committee should go direct to the railroads on these classification matters.

Mr. Ruggles suggested that wherever there is smoke there must be some fire, and he was glad to hear those present tell of some of the troubles confronting them.

Mr. Fishack urged that there was no time to be lost, and by the hustling efforts of this association we could help ourselves. It is mighty well to keep track of this classification but we are entitled to a cement rate. The only way we can get any satisfaction is to keep right after them.

Mr. Lauman remarked that in several Eastern cities he knew that plaster was shipped as cement and here was a saving of 3c a hundred.

Mr. Leenhouts was then asked to talk on the subject of credits, he being chairman of the committee. He said he had very little to say regarding the plaster credit association, as it was largely composed of calciners.

The chairman suggested that the greatest opportunities were local ones, but with a little care with credits he was sure the accounts could be improved by investigating before extending credits.

Mr. Leenhouts called attention to the fact that calciners and mixers composed this association and while they had common interests they must bear this matter in mind when it comes to taking up the question of credits.

Mr. Elcessor: "It is our anxiety to make sales which often causes us so much trouble. We ought to be satisfied with a fair amount of trade. We should have a free discussion of matters of this character, and I tell you it don't pay to pin your faith to the commercial agent. I found that out. It seems to me that one of the things we ought to do at our meetings is to compare notes, and by the exchange of ideas we can help each other."

Mr. Ruggles then moved that a credit committee have a meeting and formulate plans for the work of this association along these lines and report at the next meeting.

The meeting then adjourned until 2 p. m. on motion of Mr. L. G. Powell.

AFTERNOON SESSION.

At the afternoon session the president called the meeting to order and the question was asked as to why the local men were not present, also the other members from New York State.

The secretary and chairman then stated what they knew as to the question and several manufacturers came in about this time.

Mr. Sharp urged that they should be invited.

Mr. Powell then made a talk on association. It was an interesting, sensible address, with a lot of Bible quotations, and so much wit that everybody was interested.

Mr. C. C. Calkins then made a little talk on the bag question. He first said: "What are your methods on billing bags to customers? This matter has been thrashed out pretty thoroughly and in our Eastern association we have inaugurated a system where customers are charged with bags when the plaster is shipped them, and when returned they are credited with them. We have the co-operation of the railroads, and it is necessary for a dealer to prepay express charges on return of bags. This has reduced our expenses from the bag standpoint to a minimum. In the old days this was quite an item with many manufacturers. The loss of bags had reduced their profits, and in some cases absorbed the profits of the business.

"I tell you, gentlemen, there is only one way to handle this matter, and if you do as we have I am sure it is only a question of time when your customers will appreciate your position and I think you will have no trouble in getting the bags or getting your money for them."

One member asked how long this method had been in vogue and what success attained.

He replied that the matter had been going on in the Eastern association for sixty days and had the approval of railroad freight men and they found it worked nicely.

Mr. Powell urged that they should act as a man on this matter or it would be to the disadvantage of the trade. "It is a small item with the dealer, but as an illustration of what it costs, our firm paid $1,500.00 for the privilege last year."

Mr. Lauman suggested that they sell the bags as part of the product, which would solve this difficulty. For instance, they charged a man 8c for the bags, and if they return them we credit them with 5c. This difference takes care of the wear and tear and is as it should be.

Mr. Elcessor remarked that Mr. Calkins' suggestion was a very good one and would be a very good idea for the association to adopt.

Mr. Calkins said: "Of course you understand that the curse lies on the railroads in this case, as they refuse to accept bags unless prepaid. The Portland cement men have adopted this proposition and it should be inaugurated by this association. I tell you, gentlemen, it is an important question. As an illustration of how we have handled this question personally I asked Mr. Towne, who was formerly our bookkeeper, as to how much we had put during the month on our books. Mr. Towne said: "In the old days we had as much as $1,500.00 to $2,000.00 charged to the account of bags each month. Formerly there was always some discrepancy, but under this new system we use paper bags exclusively and our accounts very nearly balance, because this matter solves this difficulty. For instance, in a year's business we have only a deficit of $16.00, and you know we must have been benefitted by operation of this method."

The chairman suggested that if Mr. Calkins would open a school for the bag question he would have plenty of scholars.

He further said: "I have known plaster manufacturers in discussing the profit question not to be able to see any profits left except the second-hand bags in the loft. The effort of cement and other manufacturers to aid themselves on this question is worthy of consideration."

Mr. Lauman remarked: "If you send new bags out twice you have a big loss by wear, and I am sure this bag question as carried on now is wrong and should be remedied."

Mr. Powell repeated Benjamin Franklin's statement that, "We must hang together or we will hang separately." He then urged the desirability of this movement.

C. C. Calkins moved "That the association recommend that all bags be charged to the customers as part of the invoice and there be an absolute charge, the dealers on return of same prepay freight or expressage."

This was seconded by Mr. Marshall and passed unanimously.

Mr. Sharp said, "We had a resolution before us one year ago. "All bags not returned within sixty days must be paid for by the customer." We stuck to this resolution and as a result our losses from bags account this past year is very small. We know that some of the manufacturers did not do so."

One member said: "There is one thing—you can lead a horse to water but you can't make him drink."

Mr. Calkins said that if the railroads would agree to exact prepayment there would be no difficulty.

Mr. Leenhouts: "I am heartily in favor of the suggestion. If you once adopt it you should decide not to go back on it. It can not be made binding."

Mr. Lauman suggested that the matter should be taken up locally.

The chairman said: "It seems to me that we ought to take this matter up with the traffic associations and gain their co-operation, if possible."

Mr. Griswold, of Cleveland, was then called on for a talk on "Wood Fibre."

Mr. Griswold said: "This is an embarrassing honor. I have always been known as a wooden man. In fact, some of my friends told my wife that she married a blockhead. If I could quote the Bible like Mr. Powell or could find stories to bring out my points like our president I would not be so embarrassed."

He then went into details in reference to fibre plaster, and spoke of their success, notwithstanding the antagonism they had met from competition, and he was pleased to say it was coming to the front. He said he was like our friend Barnum: "You can't fool all the people all the time."

Then followed a general discussion of the subject named and a free-for-all discussion in which each manufacturer of plaster had a share. It was friendly talk and brought out some interesting information.

Those who participated in this talk, in addition to the speaker, were: Messrs. Calkins, Towne, Sharp, Lauman and Marshall.

Mr. Leenhouts was then called on to make a little talk on stucco.

He said: "I did not agree to make a talk. You all know that the plaster box was used 1,600 years ago. If you will make it a point to come to Grand Rapids, we will extend to you a cordial invitation to visit our plant and show you what we have. We have no secrets. We are believers in the association, and believe, like our Methodist brother, that there is room for all." He told a story of a union meeting and urged all to hang together.

A recess was then had for the acceptance of new members, selection of committees, etc.

The next thing being in order was the election of officers. The following gentlemen were elected for the ensuing year:

Re-elected President H. E. Dingley, Syracuse, N. Y.; treasurer, Alexander Forrester, Cleveland, Ohio; secretary, E. H. Defebaugh, Louisville, Ky.; vice presidents, James Leenhouts, Grand Rapids, Mich.; John Elcessor, Braddock, Pa., and J. M. Black, Fairmont, W. Va. Directors, C. C. Calkins, Buffalo, N. Y.; H. Houghton, Detroit, Mich.; R. W. Marshall, Wheeling, W. Va.; W. S. Griswold, Cleveland, Ohio, and E. H. Fishack, Toledo, Ohio.

The president then selected the following committees:

FREIGHT RATES AND CLASSIFICATION.—N. J. Ruggles, Columbus, Ohio; L. G. Powell, Toledo, Ohio; Henry Houghton, Detroit, Mich.

CREDITS.—C. C. Calkins, Buffalo, N. Y.; J. M. Black, Fairmount, W. Va.; Charles Fairman, Cleveland, Ohio.

PROGRAM.—E. H. Defebaugh, Louisville, Ky.; W. S. Griswold, Toledo, Ohio; C. F. Towne, New Castle, Pennsylvania.

The question of next place for meeting was discussed. On motion of Mr. Calkins, it was decided that the meeting should be held at the same time and place as the National Builders' Supply Association.

On motion of Mr. Elcessor, the secretary was instructed to furnish a list of eligible members in the United States that everybody should in future be invited to make a strong movement to increase the membership.

Messrs. Powell and Ruggles each urged that they be eliminated from the committee on freight classification, but the president thought differently.

After some discussion on this point the meeting adjourned.

THE ATTENDANCE.

CANADA.—J. W. Auld, Imperial Plaster Co., Toronto.

KENTUCKY.—E. H. Defebaugh, Louisville.

MICHIGAN.—Henry Houghton, Detroit; James Leenhouts, Grand Rapids Plaster Co., Grand Rapids; C. H. Little, C. H. Little Co., Detroit.

NEW YORK.—Charles Root, Caledonia Marl and Lime Co., Caledonia; W. K. Squier, Syracuse; C. C. Calkins, J. B. King & Co., Buffalo; J. E. Coon, Utica; F. L. Lane, Buffalo; Joseph Mandary, Rochester; H. E. Dingley, National Wall Plaster Co., Syracuse.

OHIO.—J. B. Arbour, Marietta Plaster and Fuel Co., Marietta, Ohio; W. S. Griswold, Elyria Wood Plaster Co., Cleveland; L. E. Fishack, L. G. Powell, Fishack Plaster Co., Toledo; O. F. Fairman, Forrester Plaster Co., Cleveland; W. O. Holst; Holst Builders' Supply Co., Toledo; N. J. Ruggles, Rock Wall Plaster Co., Columbus; C. F. Sharp, Buckeye Wall Plaster Co., Youngstown; E. H. Fishack, Consumers' Gypsum Co., Port Clinton; Wm. W. Huffman, Lorain; D. E. Binns, Uhrichsville.

PENNSYLVANIA.—John Elcessor, Crown Wall Plaster Co., Braddock; Charles F. Towne, New Castle Elastic Pulp Plaster Co.; Frank E. Boyd, Erie; E. L. Merriman, Scranton, A. H. Lauman, National Mortar Co., Pittsburg.

WEST VIRGINIA.—J. M. Black, Fairmount Wall Plaster Co., Fairmont; R. W. Marshall, Wheeling Wall Plaster Co., Wheeling.

NEW MEMBERS.

The new members elected at this meeting were: Imperial Plaster Co., Toronto, Canada; Consumers' Gypsum Co., Port Clinton, Ohio; Henry Houghton, Detroit, Fairmont Wall Plaster Co., Fairmont, W. Va.; Marietta Plaster and Fuel Co., Marietta; J. B. King Co., Buffalo; Consolidated Wheatland Plaster Co., Wheatland, N. Y.

Gypsum Production in 1902 by States.

At present the gypsum industry is carried on commercially in sixteen States and Territories, which, named in order of their importance as producers, are Michigan, Iowa, Texas, New York, Ohio, Kansas, Oklahoma, California, Wyoming, Colorado, Virginia, Utah, Montana, South Dakota, Nevada and Oregon.

The deposit formerly worked in the Indian Territory has been exhausted, and the crude material to supply the plant there is obtained from Oklahoma. There is a deposit of gypsite in Florida, near Lake Panasoffkee, which may prove to be of economic importance. It is well situated in regard to the general market. The new developments are principally in the West. The wide distribution of the deposits in that section permits of the utilization of only those which are of high grade and are conveniently situated with respect to transportation facilities. An attempt has been made to govern the industry in a large section of the country by the organization of the United States Gypsum Co., which controls the greater portion of the deposits in Iowa, and in part also those which have been developed in Kansas, Michigan, New York and Oklahoma.

NEW YORK.—The gypsum deposits of New York extend in a narrow belt through the central part of the State. They are developed at Oakfield, Wheatland, Mumford, Garbutt, Victor, Port Gibson, Alabama, Union Springs, Marcellus Falls, Fayetteville, Manlius, Jamesville, Cottons, Clocksville, Perryville and Valley Mills. At a number of these places the industry is of only local importance, the production being confined to land plaster. There are, however, some large plants which produce principally wall plaster. The latest developments of the

industry in this State have been the erection of modern mills for the manufacture of wall plaster.

VIRGINIA.—The gypsum-producing localities in Virginia are confined to a small area near Saltville. At Plasterco there is a plant having railroad facilities. At this place wall plaster is manufactured. In addition there are a number of quarries which produce small quantities of gypsum, which is used locally as land plaster.

OHIO.—The gypsum industry in Ohio is in the vicinity of Gypsum, which lies between Sandusky and Port Clinton. The product is converted principally into wall plaster.

MICHIGAN.—Grand Rapids and vicinity is the chief center of the gypsum industry in Michigan. At this place there are a number of mills. The deposits at Alabaster, on the border of Lake Huron, are coming into more importance. The new developments are principally at this place.

IOWA.—Fort Dodge is the center of the gypsum area in Iowa. The deposits are confined to a limited territory, but are extensively utilized, especially in the manufacture of wall plaster.

KANSAS.—In this State the principal producing localities at the present time are Blue Rapids, Hope, Gypsum City, Burns, Dillon, Mulvane and Medicine Lodge. The deposits consist of rock gypsum and gypsite. The first gypsite deposits utilitzed in this country were those of Kansas. At the present time, however, gypsite is known in other States, and is more eagerly sought than the rock gypsum, since it can be manufactured at less cost, and is especially suitable for making wall plaster.

OKLAHOMA.—The building of railways in Oklahoma during the last few years has permitted the development of gypsum at a number of places. The deposits are of vast extent. Only those which are well located are utilized. The plants are situated at Peckham, Okarche, Watonga and Ferguson. The deposits at Cement are worked to supply a mill at Marlow, Ind. T.

TEXAS.—The gypsum in Texas, although of great extent, at the present time is utilized in a commercial way, only at Acme and Quanah, in the Northern part of the State.

MONTANA.—The gypsum deposits which have been developed in Montana are situated at Bridger and Armington. The material used is rock gypsum.

SOUTH DAKOTA.—The deposits in the Black Hills of South Dakota are utilized for the manufacture of wall plaster at Spearfish and Hot Springs.

WYOMING.—The principal economic developments of gypsum in Wyoming are at Laramie and Red Buttes. At Laramie the material used is gypsite, and at Red Buttes rock gypsum. In addition there is some development in the vicinity of Sheridan, in the Northern part of the State.

COLORADO.—The principal production of gypsum in Colorado is in the locality of Loveland. The material used is rock gypsum

NEW MEXICO.—There are vast deposits of gypsum in New Mexico, and a plant is now under construction at Ancho for the manufacture of wall plaster. The deposits in this Territory include an area of gypsum sand, known as "the white sands," which is of considerable interest. The material occurs in dunes and is readily available for manufacturing, but there are no railroad facilities in the locality of the deposits.

ARIZONA.—The principal production of gypsum in former years has been in the vicinity of Tucson. Recently deposits have been opened at Woodruff and Snowflake, but have not been developed in a commercial way.

UTAH.—There is a large plant at Nephi which is engaged in the manufacture of various classes of gypsum products.

NEVADA.—The deposits at Moundhouse are worked, and the products are manufactured at Empire. Formerly the deposits at Lovelocks were worked, and recently new developments at that place have been undertaken.

CALIFORNIA.—In Southern California gypsum is manufactured, principally at Los Angeles. At a number of places it is developed in a small way. In this State local deposits are utilized as land plaster for neutralizing black alkali.

OREGON.—The only plant in Oregon is on the Eastern border of the State, at the station of Lime.

The Bridger Gypsum Works, Bridger, Mont., favored us with a neat little calendar, the decorative feature of which is a neat reproduction in miniature size of Tamburin's "Anticipation."

Roofing.

State of the Roofing Tile Industry.

One branch of the roofing industry which is very old, belonging, in fact, more to the older countries than to America, is beginning to show signs of proper expansion and growth here, and that is the roofing tile industry. There has been quite a lot of roofing tile made right along in this country, but nothing like the proportion the plentiful supply of raw material, considered together with the quality of this roofing would suggest. But it is looking more like now, and with the application of modern methods of clay working to this industry, it promises to make the right kind of a showing in the future.

One of the progressive concerns in this line of work is the Celadon Roofing Tile Co., with plants at Alfred, N. Y., and Ottawa, Ill. In a recent issue of the *Clay-Worker* there is an illustrated description of their works which is interesting, and from which we quote the following:

The Celadon Roofing Tile Co. was established in 1888. Its first product was brick and terra cotta made from the body of clay underlying its extensive properties at the first named place. This clay, when salt glazed, took on a beautiful sea green color, and this suggested the name "Celadon." Work was begun on a small scale in an old frame building, which cost seventy-five dollars, and the green glazed brick commanded a good price. There were excessive losses, however, and the attention of the management was directed towards some material which should shrink less and secure greater uniformity. At this time, Mr. Wm. R. Clarke, one of the original incorporators, and now president of the company, conceived the idea that roofing tile might be profitably made. He enlisted the co-operation of Mr. George H. Babcock, of Plainfield, N. J., who is well known as one of the patentees of the Babcock and Wilcox boiler, and together they wrought the matter out. Mr. Babcock visited Europe about that time and examined with great care all the types of roofing tile he could find. The cities of Germany and France, the eastern counties of England and even the countries of the Orient, were scoured for ideas, and he returned home with a mass of information. The results of this study proved the foundation upon which the success of the works was to be built. Mr. Babcock designed a number of tiles, and patents were taken out on some thirty shapes.

All the ancient forms of tile consisted of two parts, the tegula or roof proper, and the imbrex or convex piece to cover the joints. One of the few exceptions to this was the tile now called the "Spanish roll" in which tegula and imbrex are in one piece, the section of the tile being like a portion of the letter S, a reversed curve. The Spanish roll was again modified by the Celadon Co., to produce an interlocking tile without the corresponding drawbacks. Many of the company's exclusive patterns are made on this principle, the parts of the tile exposed to the weather being set off by interlocking flanges, making leakage impossible. The search for a material resulted in the discovery nearby of a particular fine bank of Devonian shale. This material belongs to the Chemung group and analyzes as follows: Silica, 53.20; alumina, 23.25; iron, 10.90; lime, 1.01; magnesia, 62; alkalies, 2.69; sulphuric acid, .91; manganese oxide, .52; water, 6.30—99.90.

The plant comprises eight presses, five of which are run by power, and three, for small work, by hand. The principal power presses are of the pentagonal revolving type, certain improvements, on which the firm holds patent rights, being incorporated. The blanks received from the machine are well oiled and fed to the press at one side, a gang of men removing the trimming on the other. The tile are then placed upon pallets and racked on cars for the dryer.

They have nine circular kilns for burning, of the down-draft type, and use natural gas for fuel.

The offices of the company are located at 156 Avenue, New York City, and at 204 Dearborn Street, Chicago, Ill. The officers are: William R. Clarke, president; C. Laton Ford, first vice president; E. S. Marvin, treasurer; Eugenia L. Babcock, secretary; Henry S. Harris, second vice president and Western manager, and Alford B. Clarke, general superintendent.

Roofing Material and Paints in Colombia.

Consul General Alban G. Snyder, Bogata, Colombia, South America, that country which has been having an interesting setto with Uncle Sam about the Panama canal, sends the following report in regard to the roofing material and roofing paints of that country: No tin, sheeting, or other metal roofing is used in the vicinity of Bogota, on account of the high freights and the difficulties of transportation along the rough mule tracks that serve as roads in this country. The roofing universally used is a tile, semitubular in shape, much resembling in composition and form one of the ordinary sewer pipes used in the United States, cut in half lengthways. Along the rivers and the coast corrugated iron is much used; in Antioquia shingles are used. The tile roofing is not painted, nor is it the custom to paint the shingles or corrugated-iron roofing; in fact, there is very little of what we call painting done in this section with the exception of the woodwork of houses. Most houses are built of brick, loosely put together without mortar and then plastered over smoothly on the outside. This is frequently whitewashed and sometimes painted over with a substance similar to our calcimine. The colors used are white, dark yellow, pale blue, pink, and terra cotta.

The Barber Asphalt Paving Co. have been specialists in the things they have furnished. Having furnished raw material for roofing manufacturers for some years, they find that substitutes are being used instead of the genuine high grade Trinidad asphalt. Therefore, they have concluded to make a high-class gravel surface prepared roofing and asphalt saturated roofing felt which they guarantee to be a genuine material free from adulterations and offer for sale a strictly high grade material at factory prices. This is a new departure for this company, but their wonderful record and increased business has put them at the top of the pile on paving, and there is no doubt but that they will obtain an enviable record in the roofing line. Their main sales office in roofing is in the Chicago Exchange Building, Chicago.

David McKenna, the well known slate manufacturer, of Slatington, Pa., was good to us in the calendar line, sending us three of the cutest calendars imaginable. The decorative feature of one is a little girl saying, "This little pig went to market," and suiting the action to the words. Another is a scene in a bath room, "Tub Night," with mamma giving the little ones the regular scrubbing, and the other is "Pig-a-Back," which shows a mother hog with four pigs on her back, and they all look like they were making a pleasant trip somewhere. It is certainly a dainty and artistic set of calendars and shows thoughtfulness of the kind that suggests careful attention to the wants of customers.

The Williams Patent Crusher and Pulverizer Co., beginning January 1, opened a general sales office for their crushing and grinding machinery at 225 Dearborn Street, Chicago, Ill., with Mr. Milton J. Williams in charge. Mr. Williams has been connected with this company for seven years and is familiar with all the details of the business. It is the intention of the company to continue to spread out and establish offices in different parts of the United States and Canada. They desire that in future all correspondence in reference to machinery be addressed to the Chicago office.

The American Hydraulic Stone Co., 214 Century Building, Denver, Col., is sending out a profusely illustrated catalogue which tells about their patented system of hollow concrete construction. The president of this company is Mr. J. A. Ferguson, who has been called on to read a paper on the subject of the hollow concrete blocks to the Builders' Supply Association.

The Stevens Cast Stone Co., 808 Chamber of Commerce Building, Chicago, Ill., get out some nice circulars for those who are interested in the artificial stone industry. Mr. Chas. W. Stevens, of this company, is a pioneer in the artificial stone business and is one of the best posted men in that industry to-day.

Quarries.

The National Quarry Owners' Association.

D. McL. McKAY, Chicago, Ill.....President
W. H. WALLACE, Bay Port, Mich.....First Vice President
F. A. BROWN, Aberdeen, S. D.....Second Vice President
S. M. HALL, Bucyrus, Ohio.....Third Vice President
E. H. DEFEBAUGH, Louisville, Ky.....Secretary-Treasurer

Official Organ, ROCK PRODUCTS.

A Little Talk on Drills.

A correspondent who operates limestone quarries wrote us early this month informing us he was in doubt as to whether it would be best to use steam, air or electric power for drills which he contemplated installing in his quarry, and asked for information as to which was most economical, all things considered.

This subject of drills is quite an interesting one in the stone trade just now, and with a view to bringing out discussions on the subject we submitted this matter to a number of manufacturers and asked for an expression of opinion on the subject, and we also invite further discussion from the trade.

Depends Somewhat on Conditions.

D. W. Pratt, of St. Louis, Mo., who has recently put a new drill on the market, replies to the question as follows:

"As there are so many different conditions to take under consideration in reference to the cheapest and best power for rock drills, it is impossible for me to give you an intelligent reply without something about the conditions. In open quarry work, steam has been the popular power; for mining and in large contracts for running tunnels, air is really the only power that is feasible to use. As to electricity, I can make no suggestions, as I am not at all familiar with this power for operating drills. I know that there has been some experimental work done with electric rock drills, but I do not know of any decided success where this power has been used. I know of one quarry here in the city that experimented with an electric rock drill, and they found that it was no more economical and it was not as good as the steam power they had been using. Of course, it is a well known fact that air is a better power than steam for several reasons. First, no condensation to contend with; second, air can be piped any distance without any appreciable loss of power. My experience has been that air used under the same conditions as steam is from 25 to 33 per cent. better, allowing the drill to be handled at any time and not getting warm as when used with steam."

Some of the Advantages of Air.

The Contractors' Supply Co., Chicago, Ill., who handle the McKiernan steam and air drill, write as follows: "We have your favor of recent date, and will say in regard to using power for drilling, we think compressed air the most economical as well as the most effective power for drilling rock. The steam and air drills are made exactly alike, with one exception—where they are to be used for air exclusively, the front head is made more simple than where they are to be packed for steam. There is one advantage in using air: You do not lose anything by condensation when piping out at a long distance, and you use less of it than you do of steam, consequently it costs less. Then, we think you get better service from your drill, as you do not have water to contend with in the cylinders and the drill strikes a harder blow. Steam is all right if you have your boiler close to the work where you can get steam and plenty of it, but it burns the rubber hose pretty fast, which makes it more expensive to maintain. Air hose will last four or five times longer than steam. The electric drills now on the market have never proven entirely satisfactory. They probably operate all right in the hands of an expert, but the equipment is expensive to install and we understand they give more or less trouble at times on account of burning out connections, etc. Our advice would be to install an air compressor and air drills. They will give better results than anything we have ever seen used."

Use Electric Drills in Coal Mining.

The Jeffrey Manufacturing Co., Columbus, Ohio. —We have yours of the 21st, and while we are not in position to give you complete data on the subject referred to, would state that we use both electric and air power in the operation of drills in our coal mining work. Electric power has practically superceded air, although in a few cases where the mines are troubled with gas the air machines are used.

For rock drilling, so far we have simply made our drills for compressed air or steam. Understand that electric currents have been applied to rock drills, but at this time do not believe there are any which really can be called a practical success.

Favor Air.

The Ingersoll-Sergeant Drill Co., Havemeyer Building, New York City, in reply to our inquiry on the subject of air, steam and electric drills, send us one of their specially illustrated booklets entitled, "Compressed Air vs. Electricity in Coal Mines," and a copy of discussion by Vice President W. L. Saunders, on a paper read by W. B. Clarke on "Electrical Apparatus for Coal Mining," before the American mining engineers. Our present available space will not permit even a general review of this literature on the subject, but it goes to show, that while there is a field for electricity, there is nothing in the advance in electricity in this line to alarm the friends of compressed air. The many advantages of air are pointed out among which is, it is wholesome, clean and safe, as well as economical and simple in its application.

Re-Opening of the "Bardin" Marble Quarry.

Marble men will be interested to learn of the reopening of the old "Bardin" marble quarry in West Rutland, Vt.

The property was one of the first marble properties to be selected in that section, having been sold for a quarry property nearly half a century ago. The first development work was done by the American Marble Co., a corporation composed of New York, Baltimore and Massachusetts parties who opened the deposit and worked it down for a number of years until finally having run through a large amount of capital they shared the fate of about all who pioneered the West Rutland openings—failing before reaching sufficient depth.

The property has since been held by some two or three successive owners being last owned and operated by a Massachusetts concern who finally succeeded in getting the quarry fully developed and were about doing a prosperous business when forced to close down in the fall of 1893. Shortly after this the title came into the possession of a wealthy family living in another state since which time the property has remained wholly idle and out of the market until last summer when a young marble man by the name of Eastman succeeded in buying it from the heirs.

The new owners have since been at work repairing the mill and other buildings and refitting and re-equipping the quarry plant, derrick, etc. A new engine room and power house was completed but a short time ago which is said to be one of the best and most thoroughly constructed buildings of its kind anywhere in that section. There is about eighty-five feet of water in the quarry which still remains to be pumped out before the work of producing the blocks can begin. This the owners say they expect to have removed before long and everything in readiness for doing a block business early in the spring.

Mr. Eastman, who is in active charge of the work was for several years associated with the late Geo. E. Royce one of the oldest and best-known marble men in the country, and has traveled extensively in the inferests of the marble and stone business and that of marble and stone machinery.

In its last working this quarry furnished considerable stock for the Government, some of it being used for interior purposes and a large amount of it for soldiers' memorials. The quarry is located almost in the village of West Rutland, and the deposit or vein at that point where it is located is said to possess very superior qualities in the character and durability of the stone.

Production of Talc and Soapstone in 1902.

The production of talc and soapstone in 1902, as reported by Dr. Joseph Hyde Pratt to the United States Geological Survey was, exclusive of the fibrous talc of New York, 21,640 short tons, valued at $413,497.00, as compared with 28,643 tons, valued at $424,888.00 in 1901, a decrease of 7003 tons in quantity, and of only $11,391.00 in value, the small decrease in value being due to a smaller production of the inferior grades of talc.

There was a considerable decrease in the amount of rough talc sold, and of this amount nearly one-half was of North Carolina production. While there has been a decrease in tonnage of the manufactured articles, there has been a large increase in value, due partly to the increase of the North Carolina talc that was manufactured into tailor's pencils and gas tips, and to the expensive articles made from the Virginia soapstone. Nearly all of the Virginia product is put on the market in the form of manufactured articles. Most of that from New Jersey, Pennsylvania and Maryland is put on the market as ground talc.

The production of the fibrous talc mined in St. Lawrence County, N. Y., and used principally for the one purpose of paper-making, amounted to 71,100 short tons, valued at $615,350.00, an increase of $131,750.00 in value, but of only 1900 tons in quantity, as compared with the production of 69,200 short tons, valued at $483,600.00, in 1901.

The talc imported into this country, chiefly from France and Italy, was valued at $35,366.00 in 1902 as compared with $27,015.00 in 1901, and with $1,070.00 in 1900.

W. F. Jones is opening up a limestone quarry near Batesville, Ark.

The New York Central Railway Co. will open up a quarry at Yost, N. Y.

The Imperial Limestone Co., Middletown, Pa., has been purchasing additional quarry property.

Contractor McGrath, Beloit, Wis., is making some enlargements to his quarry equipments at Mellen, Wis.

John Balsman, of Newpoint, Ind., and some Chicago capitalists, have become interested in the Hollenbee, the Magee & Stout stone quarries at Westpart, Ind.

The Middlesex Quarry Co., Portland, Conn., has elected officers for the year as follows: A. C. Goodrich, president and general manager; F. J. Hurlbut, secretary-treasurer.

The D. J. Whitney Co., Oswego, N.Y., has been incorporated with a capital stock of $15,000.00, to operate at Oswego. The incorporators are: Daniel J. Whitney, Gilbert Mollison and James Dowdy.

The Carthage (Mo.) Quarry Co. closed down a week during the past month for its annual repairs. The mill continued operating, but the weather is so severe that open quarry work is very difficult.

The Reliance Quarry and Construction Co. has been incorporated at St. Louis, Mo., with a capital stock of $10,000.00. The incorporators are: Edward A. Hermann, Henry W. Hermann and Louis C. Hermann.

J. B. O'Meara, St. Louis, Mo., who has been head of the O'Meara stone quarry business for some time, has disposed of his quarry interests and will confine himself to the construction business in the future. Mr. O'Meara is closely identified with the World's Fair, at St. Louis, and was chairman of the contractors' committee which turned in a good bunch of subscriptions.

A. M. Goldish, of LaCrosse, Wis., has purchased his partner's interest in the Black River Granite Works, Black River Falls, Wis., and will enlarge and improve the plant. The business was started last summer by Mr. Goldish and Oliver Darwin, and a crusher plant was installed. Since then the business has been hampered somewhat by a disagreement, which ended in Mr. Goldish buying his partner's interest.

The El Capitan Mining Co., of Seattle, Wash., which has marble property on the West Coast of Prince of Wales Island, Alaska, has been testing some of its marble, and reports state that a one-inch cube of marble cracked under a pressure of 7,310 pounds, while a two-inch cube cracked under a pressure of 29,430 pounds. The company is fixing up to quarry this marble on an extensive scale the coming summer, and will open up a stone yard at Seattle where they will also equip a mill for sawing, rubbing and polishing.

Stone.

Building Stone in North Carolina in 1902.

BY JOSEPH HYDE PRATT.

There was a very noticeable increase in the production of building stones in North Carolina in 1902 and the total value of all the different building stones produced was $366,727.00, which is an increase of $81,983.00 as compared with the value of the total production of 1901, which was $284,744.00. While this increase shows a decided growth in the stone industry, yet the production of 1902 does not begin to represent the attainment that North Carolina should have in its production of building stones, for it is exceptionally well provided with stone suitable for building purposes and for road materials, which are fund abundantly in the middle and western counties, including sandstone, granite, marble, limestone and slate. It of course must be taken into consideration that the building stone industry in North Carolina does not date back very far, and is only within the past few years that the quarries began to be operated on a large scale. There is still, however, need of more consolidation of interest, which will permit of a still greater increase in the quarrying. Where the individual interest has been unable to utilize steam power for drilling, tunneling and hoisting, and could only operate their quarries meagerly, by consolidating their interests into a stock company, thus reducing expenses, they have been able in some instances, to develop what was originally a small quarry into a large producer.

The stone that is produced in the largest quantity is granite, and in 1902 the production of this was valued at $338,749.00, which is an increase of $73,843.00 as compared with the production for 1901, valued at $264,906.00. One of the satisfactory features of the production in 1902 was that approximately one-half of the production of 1902 was used for building and monumental purposes, which is an increase of $59,065.00 as compared with the value of the granite used for the same purposes in 1901. It will undoubtedly be found true that as the North Carolina granites are more thoroughly developed, that there will be a very much larger demand for them, for the stone is of splendid quality, can be carried in large blocks, and is free from minerals which are affected by weathering, thus staining the granite. This production of granite was obtained by 27 producers who obtained their granite from the following counties: Buncombe, Cabarrus, Catawba, Forsythe, Gaston, Henderson, McDowell, Orange, Rowan, Surrey, Vance and Wake.

There was a falling off in the production of sandstone in 1902, which was value at only $4,825.00. Practically all of this production was used for building purposes. There are extensive deposits of sandstone of good quality in Anson, Moore, Chatham, Durham and Wake counties, which is well adapted for building purposes, and if sufficient capital would take hold of these quarries and develop them extensively and introduce the stone on the market, there would undoubtedly arise a considerable demand for it, as it makes an attractive building stone.

The production of limestone during 1902 was valued at $23,153.00, which is an increase of $14,796.00 as compared with the production for 1901. None of the production was used for building purposes, by far the larger proportion being used for road materials.

The North Carolina Geological Survey are now preparing a bulletin on the building stones of the State which will describe in detail the deposits of the various stones that occur in the State.

When Bedford Stone First Came to Chicago.

At the gathering of the cut stone men in January there was more or less discussion with reference to Bedford stone and its introduction into Chicago. The result of this discussion was much to the effect that along about 1876 or '78 the first building was put up which had an entire front of Bedford stone.

John Rawle, the veteran stone contractor, had some friends who were building some properties who had a great deal of confidence in his word, and it was only through their confidence in him that he was able to get Bedford stone started. It is reported that prior to this time a carload of Bedford stone had been shipped in to be used for window sills and caps, but when the people saw it and realized how easily it worked, they were afraid to put it in. In consequence, this stone laid around the yard for quite a while and was finally thrown out.

But after a few years Bedford stone took quite a hold on Chicago. What was needed was a few buildings to demonstrate that it was a safe material to use. Every one realized the desirability of having a stone that worked easily, but at that time anything that was at all soft in its nature was considered weak, because nothing had been used except the hardest type of limestone, granite and hard sandstone.

Mr. Rawle began the contracting business in 1872 as a building contractor and was later connected with Bedford Quarries, at Bedford, and has been a cut stone contractor in Chicago off and on ever since that time.

The first building, as far as we are able to learn, which used Bedford stone for the front was built for Mr. Mandel, at 445 Dearborn Avenue. A few years ago another story was added to this building, made of Bedford stone, and it was almost impossible to see any difference between the top story and the lower stories. The stone came from what was at that time known as Vorees & Rogers' quarries at Bedford, which we believe is now a part of the Consolidated Quarries Co.

Mineral Products of North-Central Connecticut.

The area now being surveyed in North-Central Connecticut by the United States Geological Survey, includes the Granby, Hartford, Meriden, and Middletown atlas sheets. The region consists of granites, gneisses, and schists along the border, but elsewhere largely of sandstones and trap rock. A deep cover of glacial material extends over the entire region. The features of the greatest economic importance are as follows:

Granites and gneisses occur at Higganum, at Bristol, and at Collinsville. These regions have quarries of more or less value, and it is believed that more use will be made of the stone when its character is better understood. The limits of these areas are being determined and the rock is being studied microscopically.

Sandstones and conglomerates suitable for building are the common bedrocks of this region. The principal quarry is at Portland, Conn., but quarries might readily be developed at other places.

Trap rock of remarkable uniform character is abundant in the region and is being studied with reference to its value for road material, for which there is an increasing demand. All the outcrops of trap are being located, their thickness and field characters determined, and detailed examinations of their texture made.

Brick clays are found in the Connecticut Valley district, and their utilization forms an important industry. It is believed that a study of the region will result in locating new clay deposits, and it is hoped that clays suitable for pottery may be found.

Small outcrops of barite and of soapstone have been located and will be carefully examined as to their extent and character. Prof. Herbert Gregory is in charge of the United States Geological Survey work in this district.

Pumice Stone in Russia.

(From United States Consul-General Watts, St. Petersburg, Russia.)

The Russian Government announces that pumice stone has been found within less than 2½ feet of the surface in the village of Malaya Kutma, 6 versts (about 4 miles) from Kars (Transcaucasian region). The pumace lies in horizontal strata, which are 2½ feet or more thick. It is very porous and fragile and is found partly in lumps and partly in triturated earthy heaps, which contain pieces of spongy, vesiculous, fibrous, and blazing pumace of various sizes. Owing to its great fragility, it is easily crumbled. Pumice is exported from Kars in two varieties, viz., pure, in lumps, and triturated, combined with other foreign matter. The pure pumice, which is valued in proportion to the size of the lumps, is used for polishing metals, lumber, leather, ivory, etc., as well as for preparing a sort of soap known as "pumice soap." The scattered pumice, alloyed to other minerals, is used for preparing hydraulic cement. The cost of the pumice stone on the spot, reckoning the cost of lease, transportation to the railroad station, and other charges, is 4 to 5 cents for 36 pounds. There is a project to export this pumice by rail from Kars to the port of Poti and thence ship it to Odessa. The Erivan and Kars board of the imperial domains resolved to lease the village of Alexandrovka, belonging to the said board, for working this mineral, for a term of twelve years, on the following conditions: During the first two years of lease, 1,080,000 pounds are to be extracted yearly and 2,160,000 pounds yearly during the next ten years. But the profitable working of these deposits will depend upon a reduction of the charges for rail transportation, which is now under consideration.

Pulverizing from the Crusher Down.

The problem of reducing stone from the crusher down, that is, taking the material from the crusher that will pass a two-inch ring, and reducing it to a granular or powder condition, is one of the big problems of the rock industry, especially in the manufacture of cement. There are various grinding and pulverizing devices, but the bulk of operators in this line of work seem to be settling down to the use of tube and ball mills. The ball mill is made use of for preliminary grinding and the tube mill for the final pulverizing.

One of the enterprising firms in the manufacture and development of this class of machinery is F. L. Smidth & Co., New York City, builders of the Smidth Kominuters, which represents some of the latest developments in ball mill machinery.

Speaking of the work that can be done with these Smidth kominuters, they say that one of these with a 45 h. p. engine has ground nine tons of Bedford limestone per hour from two-inch size to a fineness of 14 mesh. The same machine they say has ground six tons per hour of hard stone used for the manufacture of fire brick, from two-inch size to 14-inch mesh. This kominuter, together with one large size Davidsen tube mill is considered a grinding unit, taking the raw material as it comes from the crusher, and reducing it to whatever fineness is desired.

Arkansas to the Front.

Charles A. Pfeiffer, president of the Pfeiffer Stone Co., Batesville, Ark., says in a recent newspaper interview that there is enough of the Batesville marble to supply the world. His company is furnishing stone to be used for the superstructure of Arkansas' new million dollar capitol at Little Rock, and they seem to have lots of other business, too, for they are putting in what is said to be the largest stone plant West of Bedford, Ind. Speaking of this stone of his, the statement is made in this newspaper interview that technically it is a gray oolitic limestone, and is said to be equal, if not superior, to the celebrated Vermont marble. It was given much prominence in the official reports of Dr. J. C. Branner, former State geologist of Arkansas, who is now a member of the faculty of Leland Stanford University. President Pfeiffer's attention was called to it by specimens exhibited in St. Louis several years ago. He made a personal investigation and the absorption of the quarries by his company followed. Mr. Pfeiffer predicts that Arkansas will have one of the handsomest capitols in the Union by reason of using this marble in the superstructure, and declares that it will do more to advertise Arkansas than anything of recent occurrence. It is the purpose of the company to make a display of the marble at the World's Fair.

Artificial Niagara at St. Louis.

An immense artificial cascade has been determined upon by the authorities of the Louisiana Purchase Exposition as the centerpiece of the semi-circular lay-out of the principal buildings. The cascade itself will be divided into three parts: a large middle cascade with a smaller one at each side, the water flowing directly into the head of the Grand Basin. In all, about 90,000 gallons of water per minute will be supplied at a head of 159 feet, forming the greatest artificial water effect ever attempted.

The water will be taken from the Grand Basin itself and will be raised to the top of the cascade by a pumping station located under Festival Hall. The pumping machinery will consist of three 30 inch single-stage, turbine centrifugal pumps, purchased from Henry R. Worthington, of New York.

City, each driven by a 2,000 horse-power Westinghouse alternating current motor. The total horsepower utilized will thus be 6,000, making this the largest electric pumping station in the world. The pumps and other pieces of machinery for this plant are now being installed at St. Louis.

SPAWLS.

The Hollensbee Stone Co., Westport, Ind., has increased its capital stock from $24,000.00 to $50,000.00.

John Fuller, Fort Smith, Ark., is said to be organizing a company to operate a sandstone quarry near Waldron, Ark.

The Machias (Me.) Granite Co. is pushing things at its polishing mill, getting out spring orders of which it seems to have quite a share.

The Mt. Waldo Granite Co., Frankfort, Me., has shortened its crew during the winter months on account of the severe weather this season.

The McCarthy Stone Co., Davenport, Iowa, has a contract to erect a stone bridge at Columbus Junction, Iowa, for the Rock Island railway.

The Mould & Davis granite sheds at Morrissville, Vt., were closed down several days last month on account of sickness among its employes, but are now at work again.

The marble quarries in and around Gouverneur, N. Y., have been suffering for lack of coal and several quarries discontinued operations temporarily on this account.

R. E. Parcher, J. N. Manson, W. D. Kollock and others of Wausau, Wis., are organizing the International Granite Co., to develop red granite property near Pelican Lake.

Berg & Olson, of Duluth, Minn., have been awarded a contract to erect a stone crusher at the quarries about nine miles East of Superior to get out stone for street work.

The Sterling Marble Co. has leased the marble mill at Beldens, Vt., which has been idle for two years, formerly owned by Worthy Bros., Chicago, Ill., and have started it up again.

William Fitzgerald & Son, Yardly, Pa., have sold out their New Jersey stone quarries to Charles DeGrave & Bro., but will continue operating their quarries at Wilbertha and Yardly.

The Otis Granite Co. has been incorporated at Hudson, N. Y., with a capital stock of $50,000.00. The incorporators are: Henry E. Macrea and Harry Walder, of Hudson, and W. B. Brice, New York City.

The F. E. Conley Stone Co. has been incorporated at Augusta, N. Y., with a capital stock of $100,000.00. The incorporators are: F. E. Conley, D. E. Conley, of Higginsville, and M. Juhl, Oriskany Falls.

The Vermont Marble Co. is planning to build another marble mill at Center Rutland, Vt., to take the place of the old Clement mill which was burned December last. The new mill will be 100x300 feet, and be equipped with 25 gangs and other machinery necessary for handling marble.

The Flint Granite Co. held its annual meeting at Troy, N. Y., the past month and elected officers as follows: Charles H, Sabin, president; Chas. B. Canfield, first vice president; A. A. Flint, second vice president and general manager, and Archie R. Getman, secretary-treasurer.

The Middle River (Wis.) Stone Co. has its quarries in good working order and expects to get out lots of good stone this summer. The officers of the company are: Alex McKenzie, president; R. M. Currie, vice president; H. H. Stewart, secretary, and Alfred Williams, treasurer.

The East Carolina Construction Co. has been incorporated at Goldsboro, N. C., with a capital stock of $7,500.00, and will equip a plant for manufacturing building stone. The incorporators are: E. A. Humphrey, president; A. T. Higgins, secretary; J. R. Higgins, treasurer, and W. H. Griffin, superintendent.

Among the progressive marble people coming to the front in Georgia is the Atlanta Marble Co., of Atlanta, Ga., which has a mill and finishing works at Ball Ground, Ga., and works the stock of the famous Amicalola quarries, at Marble Hill, Ga. The officers of the company are: George F. Gober, Marietta, president; Hoke Smith, Atlanta, first vice president; John Gill, Cleveland, Ohio, second vice president; Z. D. Harrison, Atlanta, treasurer.

The Ellsworth Stone Co. has been incorporated at Iowa Falls, Iowa, with a capital stock of $25,000.00, and has purchased what is known as the Biggs quarry, where considerable machinery will be installed and active developments begun. The officers of the company are: Hale Roberts, Racine, Wis., president; D. T. Jones, of Ohio, secretary and general manager, and E. S. Ellsworth, Iowa Falls, treasurer.

We have been favored with a special edition of the San Francisco, Cal., *News Letter*, which contains among other beautifully illustrated matter two fine pictures taken from the quarries of the Madera Granite Co., at Raymong, Madera County, Cal. This company which has its headquarters at 126 Kearney Street, San Francisco, Cal., is making its mark in the Western granite world and has a long list of buildings and important jobs of monumental work to its credit. The new San Francisco Merchants' Exchange is one notable example of their work, and therein is a long string of others; in fact, this granite appears to have found a place in high grade structural and monumental work all over the Coast. The officers of the company are: John M. Curtis, president; C. M. Benedict, vice president; H. M. Owens, secretary; C. A. Warren, John H. Batcher and Robert J. Breitmann, directors; A. McLennan, Sr., superintendent.

SOMEWHAT PERSONAL.

President W. J. Prentice, of the Castalia Portland Cement Co., with office at Pittsburg, became a benedict on January 5, by his marriage to Miss Sarah Miller, of Allegheny, Pa. They spent their honeymoon in Florida, and it was a long and pleasant one.

There is a new paper in the industrial world called the *American Employer*, published at 131 E. Court Street, Indianapolis, Ind. The new paper has the indorsement of President D. M. Perry, of the National Association of Manufacturers, and appears to be an ardent advocate of the open shop policy, advocated by the association.

The Ellis Hydrate Co., of Boston, Mass., are manufacturing machinery for hydrating lime by an automatic process which they say reduces the cost of operating by one half. The plants are installed at a low cost and the product is a perfect hydrate. The processes which they control were invented by Carleton Ellis, chemical expert of Boston.

We have received from the United States Sanitary Co., Washington, D. C., illustrated catalogue of the "Winner" screen. In addition to this sand screen of theirs, the company also manufactures odorless vehicles for garbage. The company had one of these machines on exhibition at the brick manufacturers meeting at Cincinnati recently.

One of the swellest calendars that has come our way, is that of Milo M. Belding successor to the St. Lawrence Marble Co., Gouverneur, N. Y. Of ccurse the decorative feature is a swell beauty, and the business part of the calendar tells that Mr. Thomas J. Whitney is manager of this concern, which is sole producer of the St. Lawrence marble for monumental and building purposes.

The Slatington-Bangor Slate Syndicate, Slatington, Pa., did not stop at sending that business-like calendar of theirs, but have followed it up by sending out a special map of the new Republic of Panama, which is specially interesting right now, and will continue to be more so as the work continues to progress on the Panama canal. James L. Foote is general manager of this well known concern.

Among our many callers this month was O. W. Alston, of the Alston Stone Machine Co., 10 E. 23rd Street, New York, N. Y. They are specialists on attachments for stone sawing machinery, and are in a position to furnish an entire plant. Speaking about this appliance which is attached to stone saw, they say its application and by the use of steel shots, makes it possible for the manufacturer to increase his sawing capacity 150 per cent., the original expense being one-fourth of the cost of the stone sawing rig. The attachment is very simply constructed, being built of few parts; therefore there is very little to wear out and very inexpensive to keep up. In other words, by buying any kind of a stone saw and applying this attachment it is a four hundred dollar investment. When people, like the Norcross, say they have increased their sawing and stone product 150 per cent., it is a pretty good investment.

Monuments.

E. L. Worthley, Norridgewock, Me., has added polishing machinery to his equipment.

The Forest Home and Waldhein Granite Co., is one of the new monumental concerns at Harlem, Illinois.

The monument firm of Lannan & McGaffrey, Davenport, Iowa, has been succeeded by Lannan & Nelson.

The Charles Wege Marble Co., Columbus, Ohio, has increased its capital stock from $25,000.00 to $100,000.00.

Murray & Thomas, Maysville, Ky., will enlarge their monumental works and install pneumatic tools this spring.

C. J. Day, Brookings, S. D., has been visiting among the quarries in Minnesota and purchasing a stock of bases, etc.

A. R. Hill has retired from the business of Hill & Son, at Denison, Iowa, and the business will be continued by Mr. R. L. Hill.

The Kenton (Ohio) Marble Works are reported as having purchased additional ground and contemplate enlarging their work.

W. R. Jack has retired from the Crookstown (Minn.) Monumental Works, and the business is now conducted by Mr. A. J. Richards.

The Busch, Russell & Gelts Co., of Muncie, Ind., have a contract to erect an elegant mausoleum in Beech Grove cemetery at that place.

William Snee, Springfield, Ohio, has a contract to erect a memorial arch at Snyder Park in that city to cost something over $5,000.00.

The Craig Granite Co., Philadelphia, Pa., has already booked quite a quantity of orders for the summer and anticipate an active season.

The Pontius Monument Co., Mentone, Ill., had an excellent year's business and is starting into the season with a bright outlook for this year.

It is reported from Zanesville, Ohio, that Frank B. Fell and A. B. Osler have bought the monument business of Mitchell & Baldwin, at that place.

J. W. Kerr & Son, Franklin and Oil City, Pa., have a number of sarcophagus and mansoleum contracts on hand and anticipate a busy season.

The Tazewell (Va.) Steam Granite and Marble Co. has been busy right along all winter and already have quite a lot of orders in hand for spring.

C. F. Premer has purchased an interest in the monument business of Wearly & Ware, Pennville, Ill. The main office of Wearly & Ware is at Montpelier, Vt.

The Oak Hill Marble and Stone Works, Birmingham, Ala., reports an excellent year's business, and they are also in good shape to take care of the trade this year.

J. F. Steele, West Union, Iowa, has purchased the Decorah (Iowa) Marble and Granite Works, which will be operated as a branch establishment with S. M. Cox in charge.

The Lincoln monument Co., Lincoln, Ill., has had a good run of business and they seem to have had plenty of work to do all winter, both in structural and monumental work.

The Muldoon Monument Co., of Louisville, Ky., has been the successful competitor in designs for a soldiers' monument to be erected at Franklin, Ind., which is to cost about $10,000.00.

J. F. Burley & Co., Wheeling, W. Va., seem to be getting their share of monumental contracts. Among some recent ones is one for a pink Westerley granite memorial for the Masonic bodies of Westerley.

One of the progressive monumental concerns in the Northern country is the Misho Granite Manufacturing Co., Sauk Rapids, Minn. This concern appears to make a specialty of St. Cloud granite, both gray and pink.

Z. W. Cole has gone into the marble and granite business at Red Oak, Iowa.

The M. & M. Marble and Granite Co. will open up for business March 1 at the corner of Fifth and Colorado Streets, Grand Junction, Colo.

Evans, Chancellor & Evans, monument dealers of Kentland, Ind., have moved their branch from Morocco to Kentland.

The Oak Grove Monumental Works, Paducah, Ky., formerly owned by W. D. Downs & Son, is now owned by J. S. Downs & Co.

Mr. F. Doggett has opened up a granite and marble business under the firm name of Doggett & Co., 20 Elgin Street, St. Thomas, Canada.

Mr. Day, proprietor of the Brookings (S. D.) Marble Works, has been on a trip to Jasper, Minn., and other quarry points, selecting a spring stock.

F. G. Barbee, of High Point, N. C., is said to have made arrangements to establisn a marble yard at Asheboro.

The Denver (Colo.) Marble and Granite Co. has a contract to erect a pedestal for a statue of Robert Burns in the city park there, to cost $10,000.00.

Thomas Delahunty, of Philadelphia, Pa., will erect a monument at Charlotte, N. C., to the late Henry Gratton Springs, to cost $7,500.00.

Joseph Heberle, St. Paul, Minn., manufacturer and dealer in marble monuments, is said to have filed a voluntary petition in bankruptcy.

Mr. J. M. Gifford, proprietor of the Cayuga (Ont.) Marble Works, has taken into partnership Mr. A. Melick, and the firm name is now Gifford & Melick.

H. E. Brant, who has cnarge of the marble work of the new $500,000.00 courthouse at Norristown, Pa., has repurchased his marble yard at Royersford, Pa.

It is reported that Gregory & Motsinger, Lexington, Va., will establish a plant at High Point, N. C. Another report also says they contemplate establishing a plant at Asheboro, N. C.

Lloyd Bros., of Toledo, Ohio, have among other contracts, one to erect a mnument at Monroe, Mich., in memory of the soldiers of the war of 1812.

The G. H. Cutting Co., Worcester, Mass., has a contract to erect the New York State monument on Lookout Mountain, near Chattanooga, Tenn. The monument is to cost $100,000.00.

Mr. George Geddes, formerly with the Lexington (Ky.) Monument Works, has gone into business for himself at No. 430 Main Street, Lexington, Ky., where he has opened up a show room and has a splendid line of designs of monuments.

Mr. C. W. McMurphy has bought out the interest of his partner, Mr. Hahn, in the marble business of McMurphy & Hahn, and will henceforth continue the business under the firm name of McMurphy's Pioneer Marble and Granite Works.

Luckemeyer Bros., Melrose, Minn., had an accident with their pneumatic equipment the past month. It seems from reports that the air tank exploded, knocking out one side of the building, but fortunately did not injure any one.

I. W. Durham, of Charlotte, N. C., secured among other contracts recently, one for a handsome monument at Winston-Salem, N. C., which is to be erected on the West Winston school lot in honor of the late Dr. Calvin H. Wiley.

The Big Sioux Granite Co., Sioux Falls, S. D., are just getting nicely started out there in monumental and finished stone work and are equipping their plant with hoists and other tools necessary in this work.

Reports from Cortland, N. Y., state that S. M. Benjamin, the pioneer marble and granite man there, has sold out to the Allen Granite and Marble Co. Mr. Benjamin, who has reached his 78th mile stone in his life, retires from business.

James Healey, who was associated with the late C. Davis in the marble business, under the firm name of C. Davis & Co., Amesbury, Mass., has purchased his partner's interest and will in future conduct the business in his own name.

Reports from Cortland, N. Y., state that Mr. F. E. Allen has bought the stock and plant of S. M. Benjamin, of that place. Mr. Allen is a well known monument man and seems to have many friends in the trade.

The Paddock & Myers Co. has been incorporated at Racine, Wis., with a capital stock of $10,000.00, to engage in the monument business. The incorporators are: Mary A. Paddock, Benjamin Myers and Katie Myers.

C. A. Combs has purchased the interest of his partner, Mr. Hubbard, in the monument business of Hubbard & Combs, Centralia, Ill., and will continue the business alone. Mr. Combs has a number of good contracts in hand and expects to do more business than ever before.

The monument business of C. M. Oldfield & Co., 160 E. Fourth Street, and the Barnhart Granite Co., 260 E. Main Street, Chillicothe, Ohio, have consolidated as the Barnhart Granite Co. The combined enterprises figure on enlarging operations, putting in pneumatic tools and otherwise improving facilities for getting out monumental work.

Fred Nellie, manager and treasurer of the Salem (Ohio) Monumental Co., writes us by the way of correcting news items in detail: "We bought the Salem Monumental Works, formerly owned by J. C. Devine, of Alliance Works, located here at Salem, and also my works which is now called the Salem Monumental Co. I am going to put the required machinery in here to do lettering and one small polishing machine."

The Aberdeen Granite Co., Aberdeen, S. D., which is successor to the Aberdeen Marble and Granite Works, has absorbed the Light Granite Co., and the Ortonville Granite Co., of Ortonville, Minn. This gives to the Aberdeen Granite Co. the famous Ortonville quarry and red granite, and the company has also acquired the famous Baxter Granite quarry at Ortonville, out of which the great Hennepin County courthouse at Minneapolis, Minn., was made. They are in a position now to take care of big things in the way of jobbing contracts, of which they seem to be getting their share, and they are also pushing their monumental business; in fact, it seems to be the desire of the company to make the monumental business its chief line, but they are also in a position to furnish large quantities of building stone.

S. M. Clark, monument dealer, of Mattoon, Ill., has a complaint against us because of a statement made in ROCK PRODUCTS for February, that he sold out to G. W. Emerick. He informs us that he has not sold out, and has no notion of selling out, and he feels we have been unjust to him in publishing such a statement. He is right about it, too, for it is unjust to a man to report that he has sold out when he has no intention of any such thing, and we are very sorry for the error. We make it a point to try to have all our news items authentic, but inasmuch as the trade neglects keeping us posted at times, we have to depend upon items from the local papers for quite a lot of our news items, and while these as a rule are something near correct, we do occasionally fall into error by depending upon such sources for information. We wish to take this occasion to say, however, that at any and all times when we do make an error, or get muddled in our information, we will appreciate having the party concerned set us right in the matter, for it is the purpose of this paper to serve the trade to the benefit of all and injury of none.

Also Make Miter Grindstones.

The Buckhannon Marble and Granite Co., Buckhannon, W. Va.—We are glad to say that the past year has been a good one, and in view of that fact we have just installed the Kotten pneumatic tools with a Clayton air compressor and an iron gang saw, with some cutting machinery. Our entire plant is actuated by a Van Duzen gas engine. In addition to our marble and granite business, we are manufacturing the best miter grindstones in the world for glass cutters. We are sole owners of this quarry, and have kept busy the past few weeks running day and night.

Iowa Marble Dealers Meet.

Pursuant to a call issued by President Schwarz, of Storm Lake, Iowa, and Secretary C. J. Field, of Creston, Iowa, the Marble and Granite Dealers' Association, of Iowa, held a meeting at Des Moines, Iowa, February 17. What this association has already accomplished is set forth in the call issued as follows: "By the united effort of a few and the indorsement of all, a new classification of freight rates was obtained, which has saved many thousand dollars. It has stamped out of business one of the biggest mail order houses in this country that was scattering its circulars broadcast; its flashy lines were believed by many, and your trade was threatened as every small country merchant's is to-day. It has created a better feeling in competition among all who have met. Ideas have been exchanged, and none so wise but can learn from the experience of others."

At this meeting the constitution and by-laws were gone over, and the association was put in better shape than ever, judging from the report at hand, which is not as complete as we would like, to do good for the retail monument dealers in that section.

A committee was appointed to make plans for the good of the trade: C. G. Dayton, C. B. Holden, R. E. Hartman, H. D. Pierce and J. M. Batchelder.

The freight committee for the past year made its report which showed conditions very satisfactory at present, but requiring close attention. A new freight committee was appointed for 1904, composed of H. D. Pierce, J. J. McClain, of Chicago, Ill., and J. H. Godden, of Emmettsburg, Iowa.

The officers for the ensuing year were elected as follows: President, F. M. Schwarz, Storm Lake; vice presidents, C. G. Dayton, Mason City; D. P. Greeley, Red Oak; D. J. Herter, Grinnell; secretary and treasurer, C. J. Field, Creston; board of directors, H. D. Pierce, W. O. Willison, Chicago; Chas. O'Donnell, Des Moines; C. B. Holden, Cherokee; J. W. Lundy, Indianola.

There was a banquet in the evening, at which W. O. Willison presided as toastmaster, and there was quite a lot of discussion entered into, which we are sorry we are not able to give in detail, because this discussion brings out points that are good for the trade.

The next meeting is to be held at Cedar Rapids, Iowa, the third Wednesday and Thursday in January, 1905.

New Uses for Lime.

Several patents have been issued recently which introduce the use of lime into their make up, one of which is a boiler covering which consists of mica, sodium silicate, lead acetate and lime. Another is a painting cement, which consists of white lead 50 parts, litharge 25 parts, polishing varnish 6 parts, and bone glue 15 parts, turpentine 5 parts, potassium silicate 5 parts, siccative 20 parts, rock lime 30 parts, and water to make 200 parts. These are given as an instance of the constant occurrence and development of new uses of lime.

Have Completed Two New Kilns.

Western Lime Works, Saint Genevieve, Mo.—We have just completed erection of our two large new McLoon patent kilns, also very large sheds for storage of lime and cement, cooper shop and cooperage room. We are going to charge our kilns by means of a derrick which has already been installed, with a Mundy Hoisting engine to operate same. We consider our new plant second to none for convenience and have made provisions for enlarging it at any time with but little trouble, as we expect to have a half dozen such kilns in operation within the next five years. The demand for the Saint Genevieve Oolitic white finishing lime has been nothing short of marvelous during the past two years, and consequently we feel most certain of expanding our trade territory many fold in the next few years with our present equipment and excellent product. We contemplate adding a crushing plant to our works in the near future for pulverizing this high grade stone which is used extensively for flux on account of its absolute purity. Our prospects are most flattering to say the least.

The Consumers' Limestone Co. has been incorporated at Winnipeg, Manitoba, Canada.

John T. Boyd, Mt. Vernon, Mo., has gone into the lime business, having leased the old kiln at that place, which he is putting in shape and starting up.

The O. B. Ellis Co., Hespeler, Ont., Canada, say that last year was a very good one with them in the lime business and they think that the coming summer will be just as good. They have added the Eldred system of burning coal and are getting in shape generally to take care of a good trade this year.

The partnership business of William Druecker, operating lime works and stone quarries at Druecker P. O., in Wisconsin, has been dissolved and Mr. Druecker will continue to operate and improve the quarries hereafter as sole proprietor thereof. Mr. Druecker makes his headquarters at Room 206, Chicago Opera House Building, Chicago, Ill.

Slate.

A Promising Maine Slate Property.

One of the oldest slate quarries in this country is one situated at Mayfield, Me., and there is to be seen at this quarry to-day one of the best examples of hillside quarrying in the country. The first developments were begun on this property in 1870 and considerable money was spent in opening up and developing the property, but the early operators had their troubles which culminated in a financial depression which caused a suspension of work. One of the troubles in the way of the early efforts, however, was lack of facilities for transportation,

Property of the Mayfield Slate Co.

and these conditions have been so altered now, that it makes the outlook very promising for this property.

From the reports at hand, it seems that the quarry possesses slate of the best quality, and the local conditions are such as to permit an open cut in quarrying, which, as all slate people know, is quite a factor in facilitating the work of getting out this product. The slate belongs to the dark Maine variety, is very tough and strong, and stands in a vertical position in the quarry. According to a recent assay of Professor Hutchins, State Assayor of Maine, the slate contains 22.8 per cent. aluminum. The quarry property consists of 290 acres, and the cut already made is about 100 feet deep, and the width at the entrance is 30 feet. The quarry is favorably located both for working and draining, as it can be readily drained by a syphon and as the opening is on the brow of a hill there is plenty of room for dumping waste, etc. The quarry is said to be a producer of very large stock, pieces from 12 feet to 16 feet in length being very easily obtained.

In the course of development heretofore, on this property of the Mayfield Slate Co., a number of buildings were erected on the property, including a mill, store house, boarding house, office and powder house. The mill was located about a quarter of a mile from the quarry to enable the former owners to take advantage of water power.

This property, which is said to contain an almost inexhaustable supply of slate, has recently passed into the control of parties who contemplate putting the quarry in operation again under modern methods, as they think the present lively demand for slate makes it a very opportune time to again open up operations. This company has a proposition for those interested in slate, or who desire to become interested in the development of such property, which you will find in the advertising columns of ROCK PRODUCTS this month.

The Bonanza Slate Co. has been incorporated at Greenfield, N. Y., with a capital stock of $50,000.00.

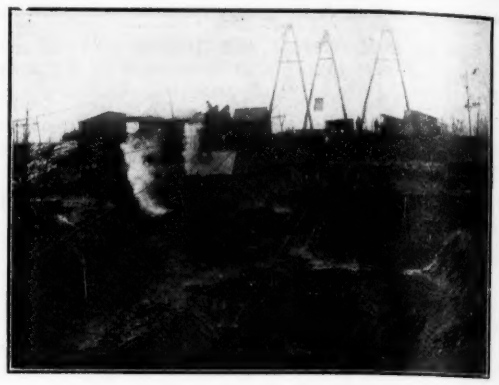
The East End Slate Co. has been incorporated at Slatington, Pa., with a capital stock of $10,000.00.

The Quarrying and Working of Slate.

Numerous articles have appeared in this paper from time to time on slate, and especially describing the Pennsylvania slate field. September and October, 1902, and December, 1903, might be mentioned especially. In these articles various phases of the slate production have been touched on with more or less completeness. Quarrying of slate can not be compared with the quarrying of any other rock product, nor can the milling of slate be compared with any other rock product, no matter what it is prepared for, roofing or interior dimension slate or blackboard or school slate. While Vermont and New York are noted for their sea green and red slate, Pennsylvania seems to be the home of the black slate.

There is some prospect of Vermont being a larger producer of black slate in the future than it has been in the past. The Maine slate belt will be the subject of a later article. In the December issue the lower part of a slate quarry was illustrated, giving some idea of how slate was mined. The view of the Bangor Washington Slate Co., which accompanies this article, is typical of the top of a slate quarry in the Pennsylvania belt. You can see the cables and blondins just as they are used in getting the slate to the yard, and in moving the waste out of the dump. As has been previously intimated, the material is all raised from the quarry by means of the blondin and a cable, the smaller pieces, which are usually cut up into roofing slate are usually raised by means of a wooden retainer, but the large pieces, such as are used for blackboard and school slate, are handled by throwing a chain around them. The way this is done is very clearly shown in the illustration of Thos. Zellner's blackboard factory. The mill picture shows Mr. Zellner at the left. The slate must be worked immediately, or at least not be allowed to dry out or freeze, otherwise it will not work well. Having the slate in the factory the next thing to do is to shape it up. This is usually done with a slate saw, which has been previously described in earlier editions.

The cut of the blackboard plant shows the next step in the process, that of splitting the slate. It is surprising to see how readily slabs of slate as large as four feet by six feet are split up into thin sections. The *modus operandi* is very clearly shown in this illustration. For the production of roofing slate where the blocks are much smaller it is a comparatively easy matter to split the blocks and this is practically the end of the work for the manufacturer. Such is not the case in the production of blackboard and school slate. This product must be brought to a smooth level surface. In some cases revolving rubbing beds are used, somewhat similar to those used in the marble and granite industry. In others they are dressed up and finished on rubbing tables by hand. These thin slabs, of course must be handled with some care. Since they now have no very great strength and only a small amount of



Taking Slate off the Ground.

Quarry of the Washington Slate Co., Slatington, Pa.

elasticity, it is necessaries that they be placed upon a table in such a way as to protect them from breaking during the rubbing process. Where they are dressed down on rubbing beds only comparatively small weights and pressure are used to keep them in place, while the table which rotates under it abrases the high parts, and leaves a comparatively uniform surface.

E. R. Williams, Arvonia, Va., and others, will open up slate quarries.

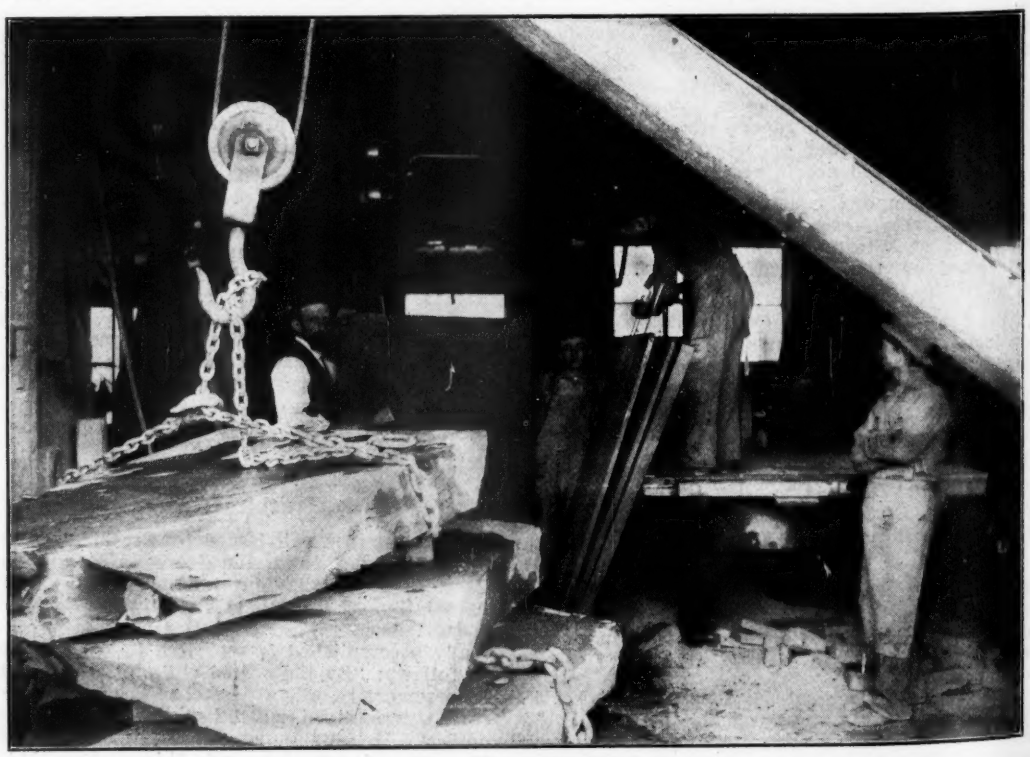
Mr. J. L. Douglass, of the Lowell (Me.) Slate Co., is preparing to open up the Boston & Blanchard slate quarry, at North Blanchard, Me.

The Penryn Slate Co. has been incorporated at Knoxville, Tenn., to develop slate property in Blount County, Tenn. The incorporators are: T. R. Price and W. B. Lockett.

The Bonanza Slate Co., Granville, N. Y., has been incorporated with a capital stock of $50,000.00. The incorporators are: Henry B. Borden, Samuel G. Ayres and William H. Riddle.

The Hot Springs Slate Co. has been incorporated at Hot Springs, Ark., with a capital stock of $500,000.00. The incorporators are: E. R. Fulton, president; J. B. Russell, vice president, and A. E. Bittell, secretary.

The Bryan Slate Co. has been incorporated at Danielsville, Pa., with a capital stock of $40,000.00. The incorporators are: George W. Finn, Sydney H. Finn, William Chappell, Scranton; C. W. Sewell, East Mauch Chunk; A. B. Bryan, Danielsville. Mr. Bryan is treasurer of the concern.



A Slate Mill Scene—Splitting Blackboards—Slate Blackboard Factoty of Thos. Zellner, Slatington, Pa.

Asphalt.

A Study on Asphalt Paving.

(Continued from last month.)

As the Cuban and Bermudez show a higher percentage of bitumen than the Trinidad material, it is natural to suppose that they would be on this account much preferable to the Trinidad, but this is not the case inasmuch as the percentage of the bitumen in the cement can not be over a certain amount, which is nearer the percentage of the bitumen in the Trinidad than in the Cuban or Bermudez, and more foreign material has to be added to these latter to make a proper cement. Objection to the Trinidad is the large amount of soluble mineral salts it contains, which in gutters and hollows dissolve up in the presence of water unavoidably accumulating and thus disintegrating the pavements. This is guarded against in some cases, by subjecting the asphalt before refining to the action of water, during which process the crude material is ground up, covered with water, agitated for some time, allowed to stand and the water drawn off and the operation repeated, after which the asphalt is run into the refining still. This it is claimed, greatly improves the asphalt.

The Matter of Fluxes.

As in most cases, the refined bitumen is too hard to be used by itself as an ingredient in asphalt cement, a flux has to be found which will soften the asphalt, and yet enable it to retain its ductility, elasticity and those properties which render it fit for use. Various petroleum compounds have been found to answer this purpose, and when mixed in proper proportions with the asphalt, form what is known as asphalt mixture or cement. As this flux is used in considerable quantities in making the asphalt mixture, the greatest care has to be taken to select the proper flux. The residuums of the Eastern or paraffin petroleum oils have mostly been used for fluxes, but within the last year the residuums from Texas oil have been used with equal, if not more success than the Eastern residuums. The Eastern petroleum residuums are composed mostly of saturated hydrocarbons of the paraffin series, and some unsaturated hydrocarbons of the California and Western oils contain mostly unsaturated hydrocarbons and are asphaltic in character. As one of the chief requisites of a flux is that it shall dissolve the refined bitumen, California oils have been the most successfully used as fluxes for the hardest asphalts, being more soluble in these than in the paraffin residuums, but these also have given way to the Texas residuums to quite an extent on account of the cheapness of this latter. The Texas oils contain but little paraffin, which is the chief objection to the Eastern residuums inasmuch as paraffin crystals tend to separate out, the bitumen being then not entirely soluble in the flux. Also the Texas oils contain a small amount of asphalt. The characteristics of the petroleum residuum of the Eastern oils are thick fluids at ordinary temperature, with a specific gravity averaging .95, a flash point of 400 F., and containing paraffin. These vary greatly, however, depending on the crude from which they are obtained and the process used in making, the best fluxes coming from distillation with as little cracking as possible. The Texas residuums are chiefly characterized by their lack of paraffin, specific gravity about .96 and a flash point about 50 degrees less than the Eastern residuums, and are thick fluids at ordinary temperatures. The California asphaltic oils are very viscous fluids at ordinary temperature, specific gravity .99, contain no paraffin and a flash point lower than the Texas residuum. With the paraffin oil flux a cement is obtained which is less ductile, less susceptible to changes in temperature and less cementitious than that made from the California oils, while the Texas residuum flux comes midway between these in quality. The California or Texas residuums have to be used with very hard asphalts. However, while giving an inferior cement the Eastern residuums are not sufficiently objectionable to be discarded for use with a soft asphalt as so little is used in the process.

At one time, the California oils were used by themselves as a paving cement, simply by driving off the lighter oils until cement of the proper consistency was obtained, but this pavement was extremely susceptible to changes in temperature and not at all satisfactory.

An Experiment in Artificial Asphalt.

Artificial asphalt was at one time made by passing sulphur into Eastern petroleum residuum at a temperature of 400 degrees F., which formed a very rubber-like substance, not ductile, and but little affected by the change in temperature. This was tried instead of asphalt, but not having a cementing power, was not found suitable. Its use as a flux was not successful either, as the advantage it imparted of not being affected by heat or cold was counterbalanced by the lack of ductility needed for sheet asphalt. In the manufacture of asphalt blocks, however, it was found a great improvement over petroleum residuum. The patent for this eventually came under the control of parties using the residuum entirely and has therefore never been used. Later the process was applied to the California asphalt oils with more success in the quality of pavement made, but after being used for some years this patent was also bought up by an asphalt corporation.

The passing of a sulphur into the asphalt results in the formation and escape of hydrogen sulphide gas, and in the case of the paraffin oils, after a certain amount of sulphur is added no further action takes place, while with the asphaltic oils, the material is finally reduced to coke.

How Testing is Done.

In the case of Trinidad asphalt, while it is at a high temperature in the refining still, the flux is added in such proportion that the resulting cement at a given temperature has a certain consistency, which is usually spoken of as the "penetration" of the cement. This is determined and expressed according to various rules, by a very clever little machine, which was invented by Mr. Bowen, of the Barber Asphalt Co., but which has lately been improved and adopted by Mr. Dow in his work in the Washington laboratory. The determining of penetration consists of finding out how far a No. 2 needle weighted with a given weight, sinks into the asphalt cement being tested at a given temperature, in a given time. The device above mentioned enables one to make the experiment at any time under equal conditions, the distance of penetration being measured on a dial and can be read to the fiftieth of a millimeter. It is interesting to note that the first method of determining the proper consistency of asphalt was to note how the teeth would sink in it, and whether or not it would stick to the teeth.

The cement for making the asphalt paving blocks is prepared in the same manner as the wearing surface, with the exception that it is not necessary that they have the ductility of the sheet asphalt, and the cement is generally harder. The hot mixture is run into moulds and pressed into shape. The blocks are generally 4x5x12 and any slight deviation from the required dimension renders them unfit for use. The composition of the blocks is about 8-12 parts of the paving cement to 92-88 parts of powdered limestone. The blocks are subjected to crushing and tensible strength tests and to tests for specific gravity. The weight of a block is about twenty-four pounds. The space excavated for an asphalt block pavement is about twelve inches, and a base made for the blocks of sand or gravel made compact by rolling and ramming. The blocks weigh quite heavy so that the cost of transportation is quite an item, and a plant near the point of usage is of great advantage. The manufacture of paving blocks from asphalt cement and crushed stone was begun in 1869 in San Francisco. These were very crude, as the asphaltic material was prepared without much regard and without much knowledge of the properties desired. The first successful blocks were laid in Washington in 1878.

Minor Uses of Asphalt.

Besides the use of asphalt for pavement there are numerous minor purposes for which the properties of asphalt are well adapted. The early inhabitants of California used the asphalt for making their canoes water tight, and for a cement in mending and making weapons and utensils. The Mexicans who afterwards lived in California, used it for use in cisterns, pavements, walks, etc., and some of their work is said to be yet in a good state of preservation.

Other commercial application of asphaltum for paving, now in use besides that is for roofs and floors, in the form of compressed asphalt, for varnish, paints, waterproofing, roofing felts and insulators

A. T. C.

Asphalt in the Indian Territory.

In view of the fact that 7,239 acres of asphalt land in the Indian Territory will be disposed of at public auction in a few months, it may be interesting to many people to know something about these deposits. Over 2,000 acres of these lands are in the Tishomingo quadrangle, which has been surveyed, topographically and geologically, by the United States Geological Survey. Mr. Joseph A. Taff is the author of the geologic folio which was recently published as a result of these surveys. In this he gives a detailed description of the asphaltic deposits of the quadrangle.

Those deposits which are of economic importance are found in the vicinity of Gilsonite, near the Northwest corner of the quadrangle. They occur chiefly as impregnations in the sandstones, conglomerates, and grits of three distinct geologic formations.

Bituminous Sandstone.

The richer bituminous sandstone contains 7 to 12 per cent of bitumen, and grades outward into the barren sand in peculiar ways. In some instances the bitumen occurs in layers or streaks parallel with the bedded structure and alternating with the purer and at present porous sand. There are at least five areas of economically valuable bituminous sandstone in the vicinity of Gilsonite. Four of these are in the Tishomingo quadrangle and the fifth is just beyond its border, on Rock Creek, two miles a little north of west from Gilsonite. In the mine at Gilsonite the impregnations of bitumen have entered some of the associated siliceous and fossiliferous limestone layers. A second area of bituminous sandstone occurs nearly a half mile west of Gilsonite. In the northwest quarter of section 22, township 1 south, range 3 east, there is a third area of bitumen impregnating the sandstone. Here there are three quarries, known as the Kirby mines. The fourth area of the bituminous sandstone in the quadrangle is in the eastward extension of the same sandstone member as that in which the Kirby mines are located. The two mines located in the bituminous sandstone of this area occur half a mile north of Gilsonite, in the south side and west end of a low ridge capped by a heavy limestone conglomerate. The fifth and least valuable bituminous sandstone deposit known in this vicinity occurs at the base of the high bluff in Rock Creek, near the southwest corner of section 21, township 1 south, range 3 east. Only a small area of the highly bituminous sandstone occurs here.

Bituminous Limestone.

The better grade of bituminous limestone carries 5 to 6 per cent. of bitumen. It occurs in two areas, one at Gilsonite and the other one mile to the southwest. Two mines have been located upon the bituminous limestone one mile southwest of Gilsonite. The larger of those is at the extreme west end of the Viola limestone ridge and the other on the crest, about 600 feet further east. The bituminous limestones are most advantageously situated for economical mining, being in a bluff 50 feet high, at the terminus of the ridge where the rocks are steeply tilted southward, exposing more than 300 feet of strata. Of the 340 feet of bituminous limestone at this locality, 128 feet in the lower part contain 5 to 6 per cent. of bitumen.

Bituminous Rock in Carboniferous Conglomerate.

Certain beds about half a mile west of Buckhorn contain the richest bituminous deposits known to occur in this field. The bituminous and associated beds consist of conglomerate, grits, shale, and limestone interstratified. The richest bed, which is locally conglomerate at the base and about 10 feet thick, will produce approximately 14 per cent. of bitumen.

This folio (No. 98) may be obtained for twenty-five cents from the Director of the United States Geological Survey, Washington, D. C.

The Walnut Creek Oil and Asphalt Co. has been organized at Austin, Tex., with a capital stock of $20,000.00, to develop asphalt property.

The Federal Asphalt Co., with headquarters at Chicago, Ill., and works at Elizabethtown, Ky., is preparing for extensive development at the latter place.

Wm. H. Venable, of Atlanta, Ga., together with T. E. Artrop, A. W. Palmer and others, has incorporated the Asphalt Paving Co., with a capital stock of $20,000.00.

The Dunderberg Asphalt Co. has been incorporated at Jones Point, Rockland County, N. Y., with a capital stock of $15,000.00. The incorporators are: L. C. Gillespie and L. I. Gillespie, of Morristown, N. J., and J. T. Gillespie, New York City.

Sand.

A Review of the Sand Industry.

The U. S. Geological Survey has issued a special report on the glass sand industry in 1902, prepared by A. T. Coons. In collecting material for this report it was found necessary to gather statistics of sand used for other purposes, so the report contains practically complete statistics of the sand industry in those states where glass sand is produced.

Requirements of Glass Sand.

Of the essential constituents in the manufacture of glass, says this report, silica, the oxide of silicon, is the most important and is the only material which enters into all varieties of glass. This silica, which is generally used in the form of sand, is found in greater or less purity in nature in deposits as a sand, as a rock easily disintegrated, or as a hard sandstone which has to be crushed before being used.

The chief of the other constituents of glass are the oxides of soda, lime, potash and lead. The oxides of zinc, tin, barium and antimony are also occasionally employed; and the oxides of manganese, gold, cobalt, tin, arsenic, copper, iron and aluminum are found in glass either as coloring matter, as impurities, or as material for the correction of impurities. The silica enters into the sand mixture, or "batch," as the oxides, while the other ingredients are mixed with the silica as the salt of the metal. Under the action of heat these salts decompose, the silica fuses, and, acting as an acid, forms silicates with the other metals, making the glass a mixture of various silicates.

The quality of glass, however, depends chiefly on the quality of the sand used. For the finest glass, as flint, plate and cut glass, freedom from color, absolute transparency, and exceeding brilliancy are required, and only the purest sand can be employed, as even slight impurities, especially small quantities of iron, tend to destroy these effects. Iron is the chief impurity, and often can be removed only by the use of magnets. Alumina and clay give a cloudy appearance. When cheap glass is desired and color is not a matter of consequence, sand containing impurities may be used, as these impurities act as fluxes and require, therefore, less flux in the "batch," or mixture, of ingredients.

Testing for Quality.

Preliminary tests applied to sand to determine its value as a glass material, while giving a general idea, are inadequate without an analysis of the sand and also without a test in the furnace. In general, the sand should be perfectly white, rather fine, uniform, even-grained and with sharp rather than round grains. Coarse sand and exceedingly fine sand, or sand which has rounded grains, is not so certain in its results, as it does not seem to fuse so easily or completely as sharp, fine, sand, and makes an uneven glass. If, however, the melting is properly and carefully carried on, the size and shape of the grain does not render the sand unfit for use. The important point is to have it as clean and as free from iron as possible.

Sand which effervesces or loses color when heated with acid is not good sand, as these properties indicate the presence of lime by the effervescence, and of clay or other impurities by change of color. The presence of iron may be detected by dissolving the sand in hydrofluoric acid and adding potassium ferro-cyanide, which indicates the presence of iron, even in the most minute quantities, by a blue color.

The Glass Sand Industry by States.

ILLINOIS.—The glass sand in this State is found near Wedron and South Ottawa, La Salle County, and is known as Fox River sand. It is also found at Millington, Randall County. Illinois sand is used in plate glass works in the vicinity of Chicago and in Indiana, and is also shipped to flint-glass works in the West. Sand from these deposits is also used in furnaces for steel molding, and as sand for sawing and grinding stone at the various quarries. The deposits in this State occur mostly as sand, but little labor is required to make them fit for use.

However, for making the best glass the sand is treated with water and steam, and is thoroughly washed and dried before being shipped. An analysis of this sand will be found in the table showing analysis of glass sand. The glass produced in Illinois in 1902 amounted to 215,012 short tons, valued at $115,023.00.

INDIANA.—The Indiana glass sand has not been so much used as that of the other States, but sand is now being produced near Coxville, Parke County, at Walcott, White County, and from rock quarried near Attica, Fountain County. An analysis of each of these sands is given in the table.

MARYLAND.—The glass sand in Maryland comes from Anne Arundel County, along the Severn river. This sand, and some from Cecil County, is also used for furnace and building sand.

MASSACHUSETTS.—The glass sand of Cheshire, Berkshire County, is especially valued for its use in the manufacture of the best flint glass, and is found at a considerable distance under ground, and contains moisture. The grains adhere sufficiently to give the appearance of a solid white rock, which is prepared for use by crushing. The sand is then carried by running water through a series of sieves, and after being spread out and thoroughly dried is ready for market. This sand is also quarried for filtration and other purposes.

MISSOURI.—The deposits of glass sand in Missouri are at Klondike, St. Charles County; Pacific, Franklin County, and Crystal City, Jefferson County. The deposits in Missouri are among the important deposits of the West, and are shipped to the East also. The sand occurs as sandstone, but is easily taken out by picks. After quarrying, it is broken up into fine sand. The glass sand produced in Missouri in 1902 amounted to 134,587 tons, valued at $82,552.00.

NEW JERSEY.—The glass sand produced in New Jersey is from Penbryn, Camden County; Cedarville, Maurice River, South Vineland, and Millville, Cumberland County. It is highly refractory sand and is largely used for steel molding in furnaces. The glass sand produced in New Jersey in 1902 amounted to 64,469 tons, valued at $45,078.00; the furnace sand to 116,951 tons, valued at $55,078.00; and 22,099 tons of sand, valued at $18,223.00, were produced and used for other purposes, which included sand for filtration purposes, a comparatively new enterprise with this sand. The mineral occurs as sand and needs so crushing. The glass works of Southern New Jersey and Southern Pennsylvania are supplied from these banks.

NEW YORK.—The sand deposits of New York State from which glass is made are in the neighborhood of Bernhards Bay, Oswego County; Rome, Fish Creek, and Boonville, Oneida County, and Ellenville, Ulster County. Sand also occurs in deposits in Madison County. The sand occurs in a form sufficiently disintegrated to need no further crushing to fit it for use in glass manufacture. The production of glass sand in New York in 1902 amounted to 12,600 short tons, valued at $13,275.00.

OHIO.—The sand used for glass purposes in Ohio is quarried in the form of sandstone and then crushed and screened to the proper size. Most of the stone crushed in this manner, however, is used for other purposes than glass manufacture. The localities where the stone is crushed for sand are Akron, Summit County; Barrs Mill, Dundee and Strasburg, Tuscarawas County; Leavittsburg, Trumbull County; Chalfants, Perry County; Zanesville, Muskingum County; Coalton, Jackson County; Massillon and Warwick, Stark County; Twinsburg, Summitt County, and in 1903 a company will operate in Lucas County. The total sand production in Ohio for 1902 was 180,982 tons, valued at $183,204.00, the glass sand production being 42,311 tons, valued at $50,426.00.

PENNSYLVANIA.—The greater part of the sand mined in Pennsylvania for glass manufacture is mined by the Pennsylvania Glass Sand Co., of Lewistown. This company has bought a large number of the sand deposits in this State and has plants located at Granville, McVeytown and Vineyard, Mifflin County; and at Mapleton and Mill Creek, Huntingdon County. Besides the Pennsylvania Glass Sand Co., the following companies are engaged in mining sand: The American Window Glass Co., Derry, Westmoreland County; The Dunbar Sand Manufacturing Co., Dunbar, Fayette County; The Fitzpatrick Glass Manufacturing Co., Falls Creek, Jefferson County; The Glass Sand Co., Ltd., Franklin, Venango County; The Pittsburg White Sand Co., Mapletown, Huntingdon County; The Crystal Sand Co., Vineyard, and the Juniata Silica Co., Newton, Hamilton, Mifflin County. Other counties producing silica sand are Lancaster, Butler, Berks, Chester, Mercer and Bedford.

The glass sand production of Pennsylvania in 1902 amounted to 36,209 short tons, valued at $348,327.00, a larger quantity and value than shown by any other State.

The sand in this State occurs both as a sandstone, needing to be quarried, crushed and prepared for use, and as a sand which, although occurring as rock, quickly disintegrates when quarried and exposed to air and moisture.

WEST VIRGINIA.—In West Virginia the glass sand is mined mostly in Berkeley Springs and Hancock, Morgan County, but is mined also at Sturgisson, Monongalia County. Sand for other uses is obtained in Marion, Hampshire, Randolph and Monongalia Counties.

The Builders' Sand and Gravel Co., Davenport, Iowa, closed a very prosperous year, and it is reported declared a dividend of 15 per cent. to the stockholders.

J. F. Rudd is the inventor of a sand conveyor and has organized a company with F. E. Ware, Kansas City, Kan., at the head, to manufacture and place it on the market.

The San Antonio Sand Co. has been incorporated at San Antonio, Tex., with a capital stock of $9,000.00, for mining sand. The incorporators are: Jose Cassino, Otto Wahrmund, E. G. Truehart, Marshall Hicks and Mrs. E. Kampmann.

The Dundee Silica Sand Co. has been incorporated at Massillon, Ohio, with a capital stock of $40,000.00. Incorporators are: M. Alice Allman, Walter H. Allman, G. L. Schwarm, Chas. E. Oberlin and E. G. Willison.

James H. Jessup, Salem, Ohio, who owns what is known as the Tolerton stone quarry on Wilson Street, is arranging to put in a complete sand crushing plant to work up the waste product of the quarry. Machinery has already been purchased and work will begin right away.

THE PENNSYLVANIA CEMENT DISTRICT.

With the opening of the spring months, business in the Pennsylvania cement region looks very promising. All outside work of course has been at a stand still, owing to the severity of the past winter, and in accordance with the resolution passed at the cement association meeting, some of the mills have been closed down from periods of from one to three weeks.

The Bonneville Portland Cement Co.'s plant at Siegfried, Pa., has about completed its repairs and expect to start in full operation next week.

The Vulcanite Portland Cement Co.'s plant at Vulcanite, N. J., is at present closed down.

The Dexter Portland Cement Co.'s plant at Nazareth, Pa., has resumed operations, and at the same time has started to make many improvements and increase the capacity of its plant.

"The Kent Mill," a new pulverizing machine, manufactured by the Kent Mill Co., office 170 Broadway, N. Y., is about to be tried in one or two of the cement mills in this valley, and if the results are anywhere near those which are claimed for it by the manufacturers, it undoubtedly will cut quite a figure in the cement industry, as the H. P. required is less per barrel of output than any machine of like kind that has been tried in this business.

There is much fear of a marked advance in the price of coal used in this industry, consequent upon strikes, but many of the plants have already availed themselves of the low prices in effect during the winter, and have stocked up pretty well.

Mr. J. M. Carrere, late of the Chas. Warner Co., Wilmington, Del., has severed his connection with them, and accepted the general management of the new Penn Allen plant, Mr. Carrere being located at Allentown, Pa.

Notwithstanding the fact that the market for cement has been decidedly off for the past six months, the general feeling among manufacturers, is that a marked advance will be warranted as soon as the large building operations, tunnels, etc., are started, and all look for a very prosperous year.

Artificial Stone

Some Questions and Answers About Sand-Lime Brick.

Will sand-lime brick stand high temperature? There has been a great deal of discussion on this point, both in this country and in Europe and before the various associations which are interested in brick manufacture.

What Fire Tests Have Shown.

Some tests have been made in foreign countries and it has been shown that sand-lime brick, especially those which have a low percentage of lime in them, will withstand a very high degree of temperature before they will melt or crumble. This is perfectly natural, since one of the most refractory brick we have, known as silica brick, is usually made of pure quartz sand and a very small percentage of lime, and sometimes a very small percentage of clay. This mixture, after pressing, is burned at a very high temperature in order to bring out the fusion between the lime and the quartz particles, making a very thin net work of amorphous calcium silicate, which gives the brick sufficient bond to withstand transportation and abrasion in use.

The smallest amount of the bond which can be carried in a silica brick, and not reduce its refractory qualities too much, is one of the undesirable features. It always leaves the brick very susceptible to abrasion.

The Chemistry of It.

In sand-lime brick we have a mixture to begin with of lime and sand, and during the hardening process instead of converting the lime present and a portion of the quartz present into an amorphous silicate, as in the case in the silica brick, it is converted into a finely crystaline hydro-silicate of calcium, which seems to give the brick approximately the same strength to resist abrasion that is given by the same amount of the amorphous silicate in a silica brick made by a firing process.

It has been proven time and again by careful examination by well trained men that the elimination of the water in the hydro-silicate does not produce rupture in the sand-lime brick. This water is eliminated below a red heat. At high temperatures the calcium silicate which was at low temperature in crystaline form is converted into an amorphous silicate which is practically identical with the silicate which is the bond in the ordinary silicate brick.

Resistance to Climatic Changes.

As an evidence of the resistance of sand-lime brick to sudden changes in temperature, the writer can state from his own experience that small samples of sand-lime brick made with 2 per cent. lime and a comparatively sharp quartz sand were introduced into the heat of a reverbatory furnace which had a temperature of over 3,000 degrees Fahrenheit without any preliminary warming whatever. That is, the cold brick was suddenly thrust into this high temperature. The brick remained intact. There is almost no material in brick form which will stand such treatment. This block, however, on being suddenly removed from this high temperature to a temperature of a winter day, did crack. .The various tests which have been published but indicate that there is very little danger of wrecking a sand-lime brick wall which has been highly heated by the sudden application of a stream of water. The writer's experience shows that this is very likely, since a block of sand-lime brick which contained about 7 per cent. of calcium oxide was heated to a white heat and plunged into cold water. There was no cracking in the block, whatever, but on examination after it was cold, it was found that the bond had been pretty much destroyed, but only for a very limited depth. So that the result of a highly heated wall receiving water from a fire hose would be, if the temperature were such as to produce a white heat on the bricks, that the exposed surface only would be softened, while the interior of the brick would remain intact, retaining sufficient strength to carry any reasonable load.

There is no question at all but that sand-lime brick properly made could replace the use of silica brick in some instances and possibly of fire brick in others. They will never be a safe brick to use when in contact with basic slags when in the presence of high heat, unless the slag is of such a nature that a slag coat will form over the brick and protect them. They are splendid non-conductors of heat and that is one of the reasons why when exposed to a high fire, it is only the surface that is softened.

We have seen a number of brick which have been placed in an ordinary stove heated to redness and thrown out into a snow bank to cool without wrecking the brick or developing any visible weakness.

Where a Small Per Cent of Lime is Essential.

The essential feature in the manufacture of sand-lime brick to be used as a refractory material is the use of a small percentage of lime, say 1½ to 2 per cent. calcium oxide, depending on the use to which it is to be put. An admixture of some very fine pure quartz will aid in shaping the brick. Of course, only a pure quartz sand should be used for this purpose, since any impurity in the sand, such as clay, iron oxide, magnesia or any basic material would have the same effect, or rather a greater fluxing effect than an equal quantity of lime.

In looking round for a location for a sand-lime brick plant the question presents itself as to the source of a cheap supply of lime. And the question has been put to us a number of times recently, would not marl which analyses, we will say from 90 to 98 per cent. calcium carbonate, be used. There is no question at all but that such a marl could be burned and there is also no question but that when such a marl had been properly burned, as to whether it would be a desirable material for sand-lime brick.

The Problem of Marl Lime.

The whole problem is this—the economy in producing the lime. For commercial purposes it would not be so desirable, because the trade demands lump lime for the most part and the product of marl burned to lime would necessarily be a powder similar to ground quick lime and one which would air slake very rapidly. For sand-lime brick or for sale as a hydrated product it would meet the requirements of the trade. It would, of course, be necessary in either case to hydrate very shortly after burning. The only question is with what economy could such lime be produced. In the first place, to manufacture on any large scale it would require rather an expensive plant, a plant somewhat similar to the burning end of a Portland cement plant. Of course, this lime could be burned in retorts, but this would be far too expensive and again most marls are pretty well saturated with water, and considerable fuel would be required in eliminating this water, and in as much as there is no exact data available as to the cost of manufacture in this way we can only have an opinion as to the comparative economy of the manufacture of lime, from a marl which would be quarried for less money than limestone, and from limestone which could probably be burned in the ordinary way for less money than the marl. So that it is not a question as to whether we could make lime from marl and use it for the sand-lime brick manufacture, but rather whether we could do it cheap enough to justify its use.

While the rotary kiln may be used for lime burning in order to utilize limestone screenings or something of that sort, we do not believe that the rotary kiln will ever be used to any great extent for the burning of marl unless it should be in localities far removed from limestone deposits.

With reference to the fuel which could be used in a rotary kiln, almost any fuel can be used when properly prepared; but we can draw a lesson from the Portland cement manufacturers on this point, since it is only a question of producing so much heat and maintaining that temperature. The modern practice among the Portland cement men is to use a high grade of coal rather than a low grade of coal, and the further you have to transport your coal the more important is it that you buy the high grade of coal because of the less freight cost per unit of heat obtained.

Aside from this, however, in the manufacture of lime, if burned by powdered coal of low grade, there would be the introduction of a large amount of foreign matter. About the only injurious matter in the low grade of coal would be the sulphur and the ash. For sand-lime brick manufacture the introduction of an ash with the lime would probably not make much difference, but sulphur would certainly be undesirable. Therefore the lime which would be best would preferably be a lime burned with wood or one burned with gas or one burned with coal of low sulphur contents, regardless of the amount of ash it produces.

How Sand-Lime Brick Stand the Frost.

Another question which is often asked is, will sand-lime brick withstand the action of frost or severe weather?

A pretty good way to answer this question is, go to Michigan City, Indiana, and see some buildings which have stood the severe weather of that climate for two years and decide for yourself.

Aside from that fact several hundred samples of brick were tested by the writer by thoroughly soaking until saturated and then alternately freezing solid and thawing out in warm water for twenty-one times. These were tested for crushing strength and for tensil strength alongside of one made under the same conditions as those tested for freezing. The result showed that all brick which were made of comparatively pure sand and contained from 5 to 10 per cent. of lime, were not weakened by this repeated freezing and thawing. The tendency was rather to show greater strength than to show weakness. The climate in and around Berlin, Germany, is not mild by any means and buildings have been put up there for a number of years.

While the various manufacturers say they use any where from two to eight per cent. of lime, the fact of the case is that those who are manufacturing to-day are for the most part working between 5 and 7 per cent., but it is probable that in some cases the amount varies and runs up as high as 10 or 12 per cent., so that we are pretty safe in saying that the general practice is from 5 to 7 per cent. calcium oxide.

No Secret About the Composition in Sand-Lime Brick.

Another question which has been frequently put to us is this: Is there any secret in regard to the composition of sand-lime brick?

There is no secret about the composition of sand-lime brick, not even as much secrecy as there is about the composition of the clay brick, because a clay brick can be made with materials which have sometimes very different mineral make-ups. With sand-lime brick there is a comparatively narrow limit of composition. The name tells what the composition is—sand and lime. If there is any thing else present, it is present as an impurity and not as a component part of the brick, but as a dilutent, and the brick will show weakness in consequence of this diluting, unless that impurity be a silicate which has the power to unlock and combine with the lime. Loam is an injurious impurity when present in quantities beyond 8 or 10 per cent.

Sand-lime brick should not be considered as in direct competition with clay brick, because the desirable locations for sand-lime brick manufacture are indicated by points which have large sand deposits, high fuel and usually no clay deposits of value. There is room for both. Both will be used and it is probable that both will be produced in the same yard in some cases.

Concrete Block as a Competitor.

The sand-lime brick people may expect their sharpest competition from the manufacturer of concrete block and the producers of cement or concrete brick. With cement at the present price a very fair grade of concrete block can be produced at a price which is not materially higher than the cost of sand-lime brick. This concrete brick does not seem to have gained any special headway so far. While there are several brick machines making concrete brick, they have not been nearly so energetic or progressive in pushing their machines into market as have been the sand-lime brick people. And in consequence of this the general public hears very little about cement or concrete brick. This is not the case with the hollow concrete block people however, because they have been very much alive and very much awake during the last year, and in consequence of this quite a number of concrete block plants have sprung up all over the country. It is a much easier proposition for these machine men to get a plant started than it is for the sand-lime brick man, because of the much lower first cost of the plant. The margin of profit might be lower on this branch of material than it would be on a sand brick. If a plant can be put in for a little money it is very likely to be popular. Aside from this nearly every body has confidence in the strength and durability of good concrete. Every one has seen concrete in side walks, which have stood for years. The man who

had a sand-lime brick proposition to sell has not had such an easy path to travel.

While the public is always looking for something new they are also inclined to be skeptical, and it has been necessary for the sand-lime brick men to demonstrate the quality of his product just as it was necessary for the producer of Bedford stone to prove when he entered new territory, that while it was soft and easy to work, it was a perfectly safe building material. From the above statements it is apparent however, that there will not be any very strong competition or comparison of artificial stone products with clay products.

It is hardly likely that sand-lime brick will ever enter the paving field, and yet it is surprising to see how well they withstand abrasions in an ordinary sidewalk. The natural color is one which can not be duplicated in clay brick, and for this reason there will always be a demand for the two of them for the production of architectural effects and we are safe to say the prime field for the use of sand-lime brick will be in building construction, and in some cases to take the place of expensive fire brick.

What It is All Coming To.

When the sand-lime brick industry began it was believed by nearly every body that they could only be made by special process, but it is rapidly getting down to a machinery proposition where it is a question of purchasing the best machinery and the best arranged plant for the production of the brick at the lowest possible cost rather than to purchase the right to use some special method of manipulation.

What is needed and is necessary in the manufacture of sand-lime brick is just what is needed and is necessary in every other young industry, and that is great caution in not allowing imperfect material to go out of your yard. You can expect in the beginning more or less difficulty in getting started. You must learn the minute details which are essential to the production of a good material just the same as you must learn the minute details in the process of manufacture of clay brick. The problems in each case are entirely different. It is, however, just as essential in one as in the other that you know the means of overcoming these difficulties. If you can buy knowledge and experience, well and good; if you can not, and have perseverance and a bank account large enough, you can no doubt overcome all difficulties and make a nice, safe and durable sand-lime brick. There is no difficulty in making a poor one, but on the other hand, there is no reason why any thing but good sand-lime brick should be made.

S. V. P.

Perfecting the Block Machine.

The Standard Sand and Machine Co., Cleveland, Ohio, had a machine in hand last year for making concrete building blocks, but instead of rushing it on the market they put in the year developing and perfecting it until they could get it to the degree of perfection desired. They built several machines and put them to the test of making blocks and then put the blocks to the most severe test possible. From the variety of blocks tested they selected the one standing the highest and made this the standard or style for that to be produced by their machine. The style of blocks selected has a vertical air space 2½ inches wide and a 1½-inch binder every four inches. This style, they say, enables the manufacturer to make blocks of uniform strength and any desired length from 4 inches up. This block has a horizontal groove one inch high and four inches wide on the under side which serves to connect all vertical air spaces as well as forming a convenient hand-hold for the mason in laying the wall. One machine will make this form of hollow block in all sizes and shapes desired, and in order to make the reader more familiar with this machine, the "Simplicity," they send the following description of it:

"This machine is built of iron and steel in a most thorough manner and has less parts, no complicated mechanism and a larger range of adjustments than any other block machine. With this machine all width blocks are made with one size pallet, which feature alone is a great saving in the purchase price of a machine. Newly made blocks are delivered upon the side, thus seasoning them without a single crack or break in the withes (bonds) so common a defect with blocks made with other machines. Face designs are made with a simple interchangeable panel device requiring but a few moments."

The company will furnish rock face, bevel panel, plain or any special design. They also furnish molds for making ornamental work, etc. The company are also manufacturers of mixing, conveying, screening and drying machinery for the complete equipment of concrete block and wall plaster plants, and will be glad to furnish all the information desired to those who are interested in their machinery on application.

BRICK AND BLOCKS.

Adams Bros., Little Falls, Minn., contemplates manufacturing cement block.

Mr. I. Hawk, Estherville, Iowa, has been figuring on going into the cement block business.

The Building Material Manufacturing Co., Warsaw, Ind., will manufacture concrete blocks.

Leverett A. Pratt, Bay City, Mich., is getting out concrete fence posts that have some unique features.

Pettijohn Bros., Terre Haute, Ind., are putting on the market a new machine for making concrete blocks.

The Standard Stone Co., Washington, D. C., reports quite a lot of contracts in hand for artificial stone in 1904.

The Tennessee Granite Brick Co., Memphis, Tenn., has increased its capital stock from $15,000.00 to $20,000.00.

C. H. Defrees is installing machinery at South Bend, Ind., to manufacture concrete building blocks of all kinds and sizes.

The Philadelphia Sanitary Art Tile and Marble Co. has been incorporated at Philadelphia, Pa., with a capital stock of $25,000.00.

The St. Clair Hydraulic Stone Co. will erect a plant at East St. Louis, Ill., for the manufacture of artificial stone to cost $15,000.00.

Dudley & Hock, dealers in building material at East Lynn, Ill., say they intend to go into the concrete stone business as a side issue.

The Anadarko Plaster and Cement Co. has been incorporated at Anadarko, Okla., by H. W. Dunbar, H. G. Gillette and J. D. Thompson and others.

Russell Bros., Waverly, Iowa, will equip a plant to manufacture concrete blocks with the machines of the Miracle Pressed Stone Co., at Minneapolis, Minn.

The Antrim Lime Co. has been organized by Nathan Jarman, of Petoskey, Mich., and others, with a capital stock of $22,500.00 to erect and operate a lime plant.

The Lancaster Concrete Stone Works is the name of a new artificial stone industry at Lancaster, Pa. The new company will produce both plain and ornamental building stone.

The Pressed Stone Manufacturing Co. has been incorporated at St. Paul, Minn., with a capital stock of $50,000.00. The incorporators are: George W. and B. S. Oakes and W. S. Darby.

The Concrete Construction Co. has been organized at Freeport, Ill., with officers in the Wilcoxon Building, to erect a plant to manufacture concrete hollow blocks by the H. S. Palmer patents.

The Decatur Hydraulic Stone and Hard Plaster Co. has been incorporated at Decatur, Ill., with a capital stock of $10,000.00. The incorporators are: George Ferre, J. H. Oren and B. F. Stanley.

The Southern Sand-Lime Brick Co., Mobile, Ala., seems to be making nice progress in erecting a plant to make sand-lime brick. The secretary and manager of the company is Mr. J. B. White.

The Cement Building Block and Stone Co. has been organized at Springfield, Ohio, to manufacture concrete blocks. The incorporators are: Joseph Bolan, Philip Benninger and James Powers.

The American Concrete and Construction Co. has been organized at Cincinnati, Ohio. Among those interested are: Charles H. Davidson, Geo. P. Walker, J. H. Crawford, C. M. Foster and Chas. H. Urban.

J. H. Turner, Chicago, Ill., is going to start a hollow concrete block plant at Wichita, Kan., this spring just as soon as the weather will permit. He will also manufacture all kinds of kindred cement products.

The Genesee (Pa.) Sand-Lime Brick Co. has increased its capital stock from $5,000.00 to $20,000.00. The officers of the company are: George R. Brown, Canisteo, N. Y., president; Theodore Cobb, Spring Mills, N. Y., vice president, and L. S. Anderson, Wellsville, N. Y., secretary.

The Pensacola (Fla.) Brick Co. has been incorporated with a capital stock of $30,000.00 to manufacture sand-lime brick. The incorporators are: W. H. Knowles, J. S. Walton, H. G. DeSilva and W. B. Forriss.

The Frost Concrete Stone Co., Dows, Iowa, are manufacturing machines for making concrete building blocks which they are now putting on the market. Mr. R. T. Frost, president of the concern, is the inventor of the machine.

Mr. Albert Lake is patentee of a process for moulding artificial stone out of crushed stone or sand and Portland cement. The general sales agents of the late patent are Montfort & Weaver, 45 Clinton Street, Newark, N. J.

The Federal Granite Brick Co., Scranton, Pa., has elected officers for the year as follows: W. L. Schalger, president; Dr. D. B. Hand, vice president; R. N. LaBarr, secretary; M. H. Holgate, treasurer, and H. A. Kaufhold, general manager.

A new company known as the Cement Building Block and Stone Co., has been organized at Springfield, Ohio, by Joseph Bolan, Philip Beninger and James Powers. The new company will erect a plant to manufacture concrete building stone.

The Building Block Manufacturing Co. has been incorporated at Minneapolis, Minn., to manufacture concrete blocks. The incorporators are: Samuel Whaley, William F. Porten and Chas. W. Buechner, of St. Paul, and James W. Cooper, of Minneapolis.

The Terre Haute (Ind.) Coal and Lime Co. is preparing to operate at Terre Haute, Ind., and at Danville, Ill., plants to manufacture patent concrete blocks. Patent rights are said to have been secured from Dr. H. O. Ross, of the H. O. Ross Co., 10 Wall Street, New York City.

The Indiana & Iowa Brick Machinery Co. has been incorporated at Mt. Clemens, Mich., to sell machinery, etc., for the manufacture of cement brick. The officers of the company are: B. R. Erskine, president; A. H. Kent, vice president; G. A. Skinner, treasurer, and N. E. Reid, secretary. Allen W. Kent is the general manager.

The Saginaw (Mich.) Pressed Brick Co. held an annual meeting last month and elected officers as follows: W. C. Mueller, president; W. B. Baum, treasurer; H. P. Baker, secretary. This company manufactures sand-lime brick and has just recently gotten on the market with their product. The plant has a capacity of 18,000 to 20,000 a day.

SALT.

The Solvay Process Co. which has a plant at Delroff, Mich., has purchased from Swift & Co., what is known as the Lincoln Salt plant adjoining the company's grounds.

Mr. Lee Richmond, P. J. Johnson have been elected secretary and treasurer respectively, of the Western Coarse Salt Co., and the Union Coarse Salt Co., Syracuse, N. Y.

The Empire Salt Co., LeRoy, Gennessee County, N. Y., has a contract to furnish 200,000 pounds of salt for the United States army. The salt will be packed in five pound bags.

The New Liverpool Salt Co. has been incorporated at San Diego, Cal., with a capital stock of $120,000.00. The incorporators are: W. H. Barton, B. Barton, C. W. Shaw, S. B. Boswell and D. G. Scofield, all of San Francisco.

Reports from Cincinnati, Ohio, indicate a scarcity in salt in that market and quotations for staple salt go from 95 cents to $1.10, for the Ohio grade. The shortage seems to be only a temporary matter, due to the impeded navigation of the Ohio river.

The stockholders of the Ellsworth (Kan.) Salt Co. held their annual meeting last month and elected officers as follows: H. Work, president; R. F Malaby, vice president; Geo. T. Tremble, secretary; B. S. Westfall, treasurer, and E. S. Moore, manager.

Reorganized the United Salt Co.

The United Salt Co. was reorganized at a meeting held Wednesday, January 20, 1904, at the offices of Kline, Carr, Tolles & Goff, Cleveland, Ohio. The following directors were elected: W. H. Bower, O. C. Barber, F. Rockefeller, F. W. Lothman, J. M. Henderson, John L. Severance and Virgil P. Kline. J. M. Henderson was elected president and F. W. Lothman secretary. While it is reported that these officers are temporary, it is also reported that the property will be improved and will continue to manufacture a large amount of salt.

Clay.

The Essentials to Success in the Manufacture of Dry Pressed Brick.

[*A Paper Read by O. K. Edwards, Newberg, Ore., at the Boston Meeting of Brickmakers.*]

The essentials to success in the manufacture of dry-pressed brick are not the same in all localities. What may be essential to success at one plant may not be at another, on account of a difference in clay, fuel, market or other local conditions. So, if I place undue stress upon the importance of something which is non-essential to some of you, you will know that it may be on account of difference in conditions.

The dry-press process of making brick is to the brick what an education is to a man, provided they both have good material to work upon; they both make either the best or the worst of their kind.

The poorly made and poorly burned dry-pressed brick should never be placed in a wall of any kind. They are the curse of the brickmaker. On the other hand, the dry-pressed brick, properly made from good clay and well burned, is the best brick for building purposes that we have at the present time.

These statements being true, the essentials in the manufacture of dry-pressed brick are more truly essential, if possible, than in any other processes. There is no place for careless or slipshod work from the clay bank to the loaded car. The first requirements necessary are good clay, good and suitable machinery and kilns, and competent management. The first of these is too often neglected. The thought of making brick from dry clay without the necessity of drying is so fascinating to the novice that he is often willing to invest his money upon a few samples made by some machinery company, and sometimes, as in a case which I have in mind where the samples were far from being good.

The next essential is the preparation of the clay. The method by which this work is done depends largely upon the nature of the clay. If the clay or shale is hard or flinty a dry pan is generally most successful. Pulverizers will do this work well, but the wear caused by the hard material makes them impractical. The pulverizer is perhaps the most satisfactory machine for handling soft clays, as it more thoroughly disintegrates or tears apart the original structure of the clay without the injurious effect of mashing or rolling. I have in mind a clay which cannot be handled with a dry pan nor rolls of any kind. The clay is exceedingly tough and oily, and flattens out in sheets under the rollers, and cannot be forced through the pan screens.

No matter what kind of clay we have or what process we use in pulverizing, the absolutely essential thing is that the clay be thoroughly disintegrated and well mixed, so that it may enter the molds in a uniform condition and be pressed into a homogeneous brick.

The mixing of clays is more important, if possible, with those of us who are located in damp climates than with you who have a dry climate. Where two clays burning different colors are mixed to make a third color, thorough mixing is not only essential for the production of a good brick, but also for making an even shade. It is not enough that the proper quantities of each kind of clay, whether damp or dry or of different structure or color, are delivered to the grinding machinery at the same time. They should be thoroughly mixed after grinding. In order to do this, it is usually necessary that the material be fed into the machinery in a constant and even manner. It is seldom that two clays have exactly the same physical structure, and consequently one is more difficult to pulverize than the other, thus causing a greater quantity of this clay to be returned to the grinding machinery. In this way, if the clay is not fed constantly from the clay room, the more difficult clay to grind will be returned to the grinding machinery without the proper proportions of the other clay, thus making it practically impossible to thoroughly mix the clays later on.

The idea in making a dry-pressed brick is to, as far as possible, unite the bonding influences of water with the density resulting from great pressure. The making of a good brick from dry clay is impossible. Air does not have the power of creating any plasticity, and consequently the pressure only expels the air, leaving only the slight cohesive power produced by the heavy pressure to hold the particles together.

A brick made from practically dry clay, when placed in the kiln, will not fuse or vitrify as it should until the melting point has been almost reached. The same thing is true of a brick which has not been thoroughly pressed. In either case the particles of clay are not brought close enough together to form a strong plastic bond, thus leaving no opportunity for the developing of a vitrifying bond.

In order that sufficient pressure may be applied to the brick it is sometimes necessary to extend the time which the brick is under pressure, beyond that intended in the ordinary dry-press machine rated at 5,000 brick per mold per ten hours run. This allows more time for the air to escape and thus permits of greater pressure without plucking.

Brick having once been well made should be set true and perpendicular in the kiln, especially with some easy burning clays, which are liable to roll or warp in burning.

The kind of kilns required for burning dry-pressed brick depends almost entirely upon local conditions. Dry-pressed brick are successfully burned in all kinds of kilns, but as a rule they cannot be burned with equal success with more than one kind of a kiln at any particular plant.

In the States of Oregon and Washington the making of dry-pressed common brick has never been made a financial success. In some cases the clay has not been suitable and the management poor, but in all cases West of the Cascade Mountains there has been another reason for this, which as for as I know, has not been overcome in that district. That is the moisture in the ground. Our soil is completely saturated with water from seven to eight months in the year, and there is never a time when the heat of the kiln will not draw up large quantities of water from the ground beneath. This has been overcome in some other damp localities, we are informed, by insulating the kiln from the earth by means of a concrete base. Insulation by some method is absolutely essential to economic burning of dry-pressed brick in that locality. This instance simply illustrates the fact that local conditions play a very large part in the essentials to success in a dry-pressed brick plant.

The kiln question is very much the same for the dry-pressed brick man that it is for the maker of brick by other processes, in that poor and carelessly constructed or improperly planned kilns are usually burdensome and unprofitable apparatus. Kilns should always be constructed upon scientific principles, after a careful study of local conditions and requirements, by a competent engineer.

The burning of dry-pressed brick is a subject too large, and one which partakes too largely of the local conditions, to undertake any definite discussion in this paper. However, there are some things in connection with the burning of dry-pressed brick which are essential to the greatest success, which I will refer to in a general way. At this time, when the highest grade brick is demanded at a price which means small margins, uniformly good burns must always be obtained in order to make the business profitable. An occasional poor burn consumes the profits realized from the good burns, and thus failure is the result where there should be success. In order that we may have uniformly good results from our burns we must have an absolute uniform system in handling our kilns. This means that we must know the exact condition of the kiln at all times and be able to regulate those conditions at will. For this purpose scientific men have brought out the draft gauge, the hygrometer and pyrometric cones, all of which are of the greatest value in handling a kiln. The keeping of an exact record of the action of these, as well as of the settle of the brick in burning, should always be required of the burners. We cannot be too exact or give too much care to the burning of our brick, for no matter how good the clay may be or how well the brick may be made, all is lost unless well burned. However, good clay properly made into good brick will very materially aid in the burning.

Every part of the process in making dry-pressed brick, if properly performed, assists in making every other part more easy to accomplish.

A good clay thoroughly pulverized, with plenty of moisture, hard pressed, carefully dried and well burned makes the best building brick on the American market.

Statistics of Clay Products.

To count bricks made in this great country, with its more than three million square miles and its eighty millions of people, ready to help themselves to any convenient clay bank, seems like one of those mediæval tasks imposed by a wicked fairy on some spellbound victim as the price of deliverance. To be sure, it takes time and money and patience even now—the co-operation of many producers, the skill of numerous statistical agents, the assistance of the locomotive, the mail bag, and the telegraph wire—but the task, gigantic and yet minute, is accomplished year after year, just as the enchanted princess in the fairy tale always succeeds in gathering all the four-leaf clovers in the world or enumerating the blades of grass in a meadow. That this is true is made known by the fact that the United States Geological Survey has ready for distribution a chart that shows the quantity and value of the clay products of the United States in 1902 as distributed throughout the several States. This chart was compiled by Mr. Jefferson Middleton under the supervision of Dr. David T. Day, chief of the Division of Mining and Mineral Resources.

The total value of our clay products in 1902 amounted to $122,169,531.00. Ohio is the banner State of the Union in point of production, leading off with $24,249,748.00 worth of goods. Pennsylvania, with a credit of $17,833,425.00, is next in line, and little New Jersey follows, with $12,613,263.00 to her name. Illinois comes next, with clay products to the value of $9,881,840.00, and New York follows closely with a value of $8,414,113.00. The last on the list is Wyoming, with a production valued at $22,150.00.

These clay products are of various kinds. They include common brick, front brick, vitrified paving brick, fancy or ornamental brick, and fire brick, as well as stove lining, drain-tile, sewer pipe, ornamental terra cotta, fire proofing, tile, pottery, and miscellaneous clay products.

A little over 40 per cent. of the total value of clay products is in common brick. The production of brick of that class in 1902 amounted to 8,475,067 thousand brick, having a value of $48,885,869.00. They brought an average price of $5.77 per thousand. Ohio, which stood first in value of clay products, yields to Pennsylvania, Illinois and New York in the value of its product of common brick. In point of quantity New York, which produced 1,061,712 thousand common brick takes precedence over all the others. A corresponding decrease in price is therefore shown, New York brick averaging only $4.73 per thousand as against $5.01 in Illinois, and $5.74 in Ohio, and $6.40 in Pennsylvania.

The quantity of front brick produced in the country amounted to 458,391 thousand, valued at $5,318,008.00, or $11.60 per thousand. Of vitrified brick there were 617,192 thousand, valued at $5,744,530.00, or $9.31 per thousand. The value of fancy or ornamental brick amounted to $806,453.00, of fire brick to $11,970,511.00, of stove lining to $630,924.00, of drain tile to $7,174,892.00, of sewer pipe $7,174,892.00, of ornamental terra cotta to $3,526,906.00, of fire proofing to $3,175,593.00, and of tile to $3,622,863.00. The value of miscellaneous clay products amounted to $3,678,742.00. These included adobes, aquarium ornaments, boiler and locomotive brick and tile, burnt-clay ballast, carboy stoppers, chemical brick and tile, chimney blocks, pipe and tops, clay furnaces, retorts and settings, conduits for underground wires, crucibles, curbing block, fire-clay insulators, fire mortar, flue lining, furnace brick and tile, gas logs, glass-house supplies, grave markers, ground fire brick, muffles, oven tile, paving block, porous cups, saggers, stone pumps, wall coping, web-tile sewer, and well brick.

Nearly 20 per cent. of the clay products of the country are included under the term pottery. The value of the total product amounts to $24,127,453.00, of which Ohio contributed $10,519,138.00, thus showing that Ohio owes its rank as first of the clay-producing States to its production of pot-

tery rather than of brick and tile. New Jersey's pottery, valued at $6,192,959.00 comes second on the list. Pennsylvania pottery amounted to the sum of $1,876,265.00. West Virginia to $1,166,464.00, and New York to $929,431.00. The pottery production of nearly every other State was below half a million dollars in value.

Enameled brick, the entire product of which was valued at $471,163.00, was made only in California, Illinois, Maryland, Missouri, New Jersey, Ohio and Pennsylvania. New Jersey and Pennsylvania, with products respectively of $202,740.00 and $57,183.00, were the only States in which there were three or more producers of enameled brick.

It is gratifying to note that the clay industries of the country appear to be progressing steadily. The year 1900 showed an output valued at $96,212,345.00, which increased in 1901 to $110,211,587.00, and has reached in 1902 the sum of $122,169,531.00. The chart which shows the figures for 1902 may be obtained on application to the Director of the United States Geological Survey, Washington, D. C.

Master Brick Layers' Association Have a Banquet.

The Master Brick Layers' Association, of Dayton, Ohio, and their friends, enjoyed a banquet on the evening of February 25, at the Phillips House, Dayton. Covers were laid for thirty and they came within four of filling the table, as there were twenty-six seated. The spread was in charge of Messrs. H. Teigler and Joseph Boren, and they did themselves great credit. The table formed a square, in the center of which was palms and ferns of suitable height not obstructing any view. The table was of unusual width, a small ribbon attached to a candelabra at each corner of the table dividing it into halves, the inside part being used for cut flowers and ferns, red carnations and red roses prevailing. All lights were shaded with red and the effect was very warming, welcoming and beautiful. Each guest wore a red carnation and a red badge "Master Bricklayers' Association, Dayton, Ohio, February 25, 1904." Music was furnished by the Miller Orchestra. The menu card was appropriately decorated with red ribbon, on which the letters M B A were printed in gold, and it was a good one from blue points to cigars.

The toastmaster for the evening was Mr. John W. Boren, who kept all present in good humor by his witty sayings as he called on each for some remarks. He stated he did not expect any prepared speeches, but wanted every one to talk in his good old way and voluntary.

A little quiet prevailed, when Mr. Barney Teigler called "More Mortar" and the fun began.

Mr. C. H. Lyons has the tact of making himself pleasant, especially at a banquet. Cal. knows a good thing when he eats it.

Mr. George Wuichet wanted to know where the bricklayer gets his pull from, for no sooner is he on the job, the word goes down the line: "The Bricklayer is here, and every other mechanic on the job gets out of his way."

Mr. Henry Hiddeson stated: "We are a jolly and pleasant lot." Henry always has a smile coming.

Mr. Ed. Gabler, who held the stonemason end down, had a corner on every thing in his reach. Ask him for his telephone story.

Mr. Herman Teigler believes in keeping everything running.

Mr. John Kling thought the time was here for Dayton to have a builders' exchange and suggested some very good ideas.

Mr. C. W. Schaeffer admitted he was no after-dinner speaker, but said the other member of the firm prided himself on a good speech, and so he left it to George.

Mr. Andy Kempert had a speech prepared, but when he got up stated that what he had intended to say had been said by the other fellow.

Mr. Clickeret was the silent man, and will have less to say at the next meet.

Mr. Ed. Parish gave a very pleasant talk and a full explanation as to pool playing.

Mr. J. W. Eichelberger was of a religious turn and stated that the Golden Rule was being observed more each year amongst contractors and harmony would prevail.

Mr. Henry Unververth believes in laying everything to a line, so he drew the line as to speech-making.

Mr. J. W. Sortman is always ready to offer a toast to his fellow associates.

Messrs. Chas. A. Stainrook and A. W. Eichelberger believe the silent man to be the wise one, and left good impressions by their pleasant looks.

Mr. George Gengnagel can tell a funny story, be pleasant and remember his wife as to flowers.

Mr. John Hume "plastered" everything together in an easy manner.

Billy Adelberger is a young one, but knows a fat girl from a lean one.

Mr. Hodson as a bricklayer is a success, but as a speechmaker stated, "I pass."

Mr. Henry Stuck is all right, but when it comes to a funny story he is stuck on it, but the other fellow must tell it.

CLAY NEWS NOTES.

Mr. R. J. Phillips, Tallahassee, Fla., is thinking of taking up the manufacture of sewer pipe.

It is reported that the Sibley Quarry Co., of Trenton, Mich., will erect a plant to manufacture brick.

The Frankfort (Ind.) Brick Co. is improving its plant and preparing to operate on a larger scale this season.

The Michigan Brick Co. has been incorporated at Vriesland, Ottawa County, Mich., with a capital stock of $12,000.00.

A new brick company has been organized at Detroit, Mich., to erect a plant this spring by S. Sturva, Robert Sturva, Peter Adams and Fred Smeltzer.

The Lehigh (Iowa) Brick and Tile Co. closed down its plant for the winter and are making extensive repairs with a view to a heavy run next summer.

The Mound Valley Brick and Tile Co. has been organized at Mound Valley, Kan., with a capital stock of $20,000.00, by E. R. Dickinson, B. E. LaDow and others.

Mr. James Campbell, of Straight & Campbell, Lehi, Iowa, has bought out his partner's interest in the business and will henceforth conduct the brick and tile business alone.

The Oak Hill Fire Clay Co. has been incorporated at St. Louis, Mo., with a capital stock of $20,000.00. The incorporators are: F. W. Hodfield, W. R. Hollis and J. H. Studman.

Reports from Boston, Mass., state that Alonzo E. Locks has been appointed receiver of the New England Brick Co., on application of the Old Colony Trust Co., Boston, Mass.

The Harris Brick Co., Youngsville, N. Y., which commenced developments last fall, has its plant and yard in good shape for active operations as soon as the weather permits.

The Athens Brick and Tile Co. has been incorporated at Athens, Mo., with a capital stock of $10,000.00. The incorporators are: Joseph Braun, Frank Veitenhaus and Fred Rietbrock.

The Troy (N. Y.) Brick Co. has elected officers for the year as follows: Thomas F. Morrissey, president; Stephen Comeskey, vice president; A. B Cobden, secretary and Roy H. Palmer, treasurer.

A fire occurred last month in the Indiana Brick Co. works of Alexandria, Ind., doing damage to the amount of $50,000.00. The president of the company is Thomas L. Stillwell, of Anderson, Ind.

At the annual meeting of the Purington Paving Brick Co., Galesburg, Ill., figures of the annual round-up show that the company manufactured 57,600,000 and shipped 54,142,000 brick during last year.

The Progressive Pottery Co. has been incorporated at Roseville, Ohio, with a capital stock of $10,000.00. The incorporators are: F. M. Rider, J. E. Walker, George W. Walker, M. Dwight and C. J. Golden.

The Nebraska City Brick Co. has been incorporated at Nebraska City, Neb., with a capital stock of $30,000.00. The company has taken over the plant in that city which will be enlarged to manufacture 10,000,000 brick next season.

The Enterprise Brick and Tile Manufacturing Co. has been incorporated at Newbern, N. C., with a capital stock of $25,000.00. The incorporators are: J. W. Stewart, Newbern; G. T. Eubanks, Clarks; C. H. Wetherington, Tuscarora.

The Connecticut Brick Men's Association had an annual banquet at the Tontine Hotel, New Haven, Conn., last month with about fifty present. At the close of the banquet officers were elected for the year as follows: F. L. Stiles, North Haven, president; F. I. Shares, North Haven, vice president; Thomas McCabe, New Britain, treasurer, and F. C. Whitney, Hartford, secretary.

The Red Star Brick Co., which has a plant at Warren, and one at Jamestown, N. Y., is said to be erecting a plant at Corry, Pa., worth about $25,000.00. The officers of the company are: A. J. Hazeltine, president; C. D. Crandell, secretary-treasurer, and J. E. McCusher manager.

The stockholders of the Gethmann Brick Co., which has plants at Gladbrook and Reinbeck, Ia., held an annual meeting the past month and elected officers as follows: William Gethmann, president; Adolph Gethmann, secretary; Fred Gethmann, treasurer, and manager of Gladbrook plant, and John Gethmann, manager of the Reinbeck plant. They will add this spring to the Reinbeck plant machinery for manufacturing tile and hollow brick.

Good Sales this Winter.

The Eufaula (Ala.) Brick Co.—Our plant will start again about February 15. Sales have been fairly good this winter. Our stock has run down to about 2,000,000 builders' brick.

Production of Barium Hydrate and its By-Products.

Barium hydrate and strontium hydrate are used in the best sugar manufacture, both serving to convert the sugar contained in the beet sugar molasses into barium saccharate or strontium saccharate, and to obtain it by decomposition of the latter with carbonic acid.

The production of barium hydrate is accomplished in many ways, but it is advisable on account of the simpler work and higher yield to start with barium carbonate. For a smooth production of barium carbonate good crude barium sulphide and soda calc. of high percentage are required. As is well known, crude barium sulphide is obtained by a melting process, ground heavy-spar (native sulphate of barium) being reduced with suitable coal to barium sulphide. A well conducted process must show by analysis, if the percentage of BaS of about 90 per cent. acid—soluble and 75 per cent. water—soluble, in the case of corresponding raw materials. The cooled crude molten mass is washed out with hot water in suitable receptacles, the barium carbonate being then precipitated out in a receptacle, with mechanical stirrer, by direct introduction of carbonate of soda. The conversion takes place according to the following equation with simultaneous production of sodium sulphide:

$$BaS + Na_2CO_3 \text{ equals } BaCO_3 + Na_2S + 9H_2O.$$

The white carbonate of barytes is allowed to settle the supernatant, clear yellow sodium sulphide lye being siphoned off and preserved for further use. The barium carbonate precipitate is washed out once and pressed into firm cakes in a suitable filter press.

In order to produce the caustic baryta from barium carbonate the moist and solid pressed pieces of barium carbonate are placed in moderately high layers in a glowing muffle furnace. After some time superheated steam is passed, with some turning of the roasted material, into the muffle, in order to bring about a quicker evacuation of the carbonic acid through the outlet provided at the muffle. When after a few hours the transformation into barium hydrate has taken place, the contents of the muffle are drawn into water and the barium hydrate washed out, while the possible small residue of barium carbonate is returned into fresh roasting processes. After the crystallization melt in suitable receptacles and place the barium hydrate on the market in the melted state. This method has many advantages over that of using saltpeter and metallic oxides.

The residue of sodium sulphide from the barium carbonate manufacture can be utilized to good advantage in two ways. One way is to boil down the NaQS lye to 28-30 deg. Be. and to allow the sodium sulphide to crystallize out, which is bought by tanneries and chemical factories, or else the lye is used for the production of zinc sulphide, which latter utilization I consider the more rational of the two. For this purpose a suitably purified zinc chloride solution is mixed with the sodium sulphide lye, the precipitated zinc sulphide is pressed off, carefully dried and equally carefully calcined. In this manner a zinc sulphide is obtained which is faultless as regards whiteness and softness. After grinding wet, and drying, mixing may be done with the disintegrator, directly, with suitably ground native white heavy-spar into the different grades, without affecting the covering power. The lithopones produced in this manner, according to tests made, possess at least the same covering power as our medium grades.—*Farben Zeitung—Oil, Paint and Drug Reporter.*

Sales Agents

News and Chat for and About Them.

The Man that Sells.

The man that sells the product of the manufacturers of builders' supplies, whether he be general sales agent, with headquarters at the factory or some other point; whether he be district sales agent with offices in some other city, or whether he is a traveling salesman on the road, is an important factor in the trade to-day, for the operation of the plant depends on the making of sales enough to keep going, and making them at such prices that will insure a living profit to the manufacturer.

Quite a lot might be said about the qualities necessary to make a man a successful salesman, and from time to time it is our intention to make an effort to say some things on this point and to invite contributions from successful salesmen on the subject. But what we have in mind right now most emphatically in this connection is, the man that sells is such an important factor in the trade represented by ROCK PRODUCTS that he is deserving of a department to himself, and to that end we propose to set apart a special corner in ROCK PRODUCTS to be devoted to little talks for and about the man that sells, and we ask that sales agents and traveling salesmen, both of builders' supplies and machinery and appliances for use in manufacturing, consider this department as their own, and being open for discussion for any and all subjects of special interest to any of their craft.

We expect to have the pictures of bright lights in the craft from time to time, so as to introduce them more thoroughly to the trade through the medium of this paper, and to do everything in our power to help make the life of the man that sells more pleasant and profitable. We know that he has his troubles, not only in selling material, but after it is sold if there is any trouble comes, if a building collapses or a street or government job gets condemned, or some cranky commissioner finds fault with a carload of cement, the man that sells must bear the first brunt of the trouble, and the manufacturer as well as the man that buys the material, looks to him to straighten it out. Of course it is not within the province of a trade paper to shoulder all these troubles and straighten them out, but what we can do, is start a sort of clearing house here for troubles and causes therefor in the hope of preventing some of them in the future. We are willing to do our part, and all we ask is the co-operation from sales agents, salesmen and others interested among the constituents of this paper.

We are pleased to be able to print this month a picture of one sales agent, and expect to follow this up with quite a lot more; in fact, we want to see the faces of some good sales agents and salesmen presented in every issue of ROCK PRODUCTS.

A Popular Sales Agent Married.

Many friends of the trade will be pleased to learn of the marriage of Charles Johnson, manager of the sales department of the Castalia Portland Cement Co., of Castalia, Ohio, on February 24, to Miss Charlotte C. Smith, of Sandusky, by the Rev. E. A. King. The wedding was a quiet one, invitations being extended to relatives and near friends. The wedding party left on the evening of the 24th for a several weeks' honeymoon in the East, visiting New York, Philadelphia, Washington and other points.

Mr. Johnson is one of the popular men in the sales department of the cement business, being connected with the sales of the Ohio Portland cement for some years. He has the congratulations of many friends in which the editors of ROCK PRODUCTS join. We hope the happy couple will have a long and prosperous voyage through life.

Burrage at Grand Rapids.

The Newaygo Portland Cement Co., of Newaygo, Mich., have appointed Mr. George T. Burrage assistant secretary of the company and general sales agent; and the general sales agent's office has been opened in the Michigan Trust Co. building, Grand Rapids, Mich., where Mr. Burrage will stay and give prompt attention to all their trade. This plant will be one of the best equipped in the West and is making a fine quality of cement. General Sales Agent Burrage will do the rest.

Atlas and Berger.

Mr. Chas. F. Berger, one of the best known men in the West connected with the cement business, having sold Portland cement for twenty years in Chicago, has affiliated himself with the Atlas Portland Cement Co. as a sales agent, with headquarters in the Marquette Building. Everybody knows The Atlas, and all the buyers in Chicago know Chas. F. Berger, but, for fear some may not remember him, we are printing his picture on this page.

The combination will be hard to beat—Atlas and

C. F. BERGER,
Atlas Portland Cement Co., Chicago.

Berger—and we are sure all concerned will be pleased.

ROCK PRODUCTS extends best wishes for the new connection.

Realities.

This is a funny old world! And advertising is one of the funniest propositions, especially where you see one man make fifty or a hundred thousand dollars out of a little investment for a few hundred dollars in a trade paper. The other fellow will complain that he only had a dozen or fifteen inquiries and while he made two sales, he lost one car.

Now, gentlemen of the jury, there is no legitimate trade publication that will guarantee the credits of the people who will write to the advertisers. If a man don't look after his own credits, he is liable to lose his factory and everything else, no matter how much he advertises, if he throws money away by shipping stuff to any old customer and then charging up to the trade paper the losses.

There are other people who don't follow up their inquiries and don't know where they get their results from but tell you that general results are about all they can get out of advertising.

Then there are others who are broad-gauged, and if they get a good line of inquiries from a paper, they appreciate it and try to encourage the publisher to keep the trail warm and get new business for them. There is nothing like team work between the advertiser and the publisher.

Side Talk.

Mr. J. T. McCarty, a concrete expert, formerly in the United States Government service, has taken a position with the Clyde Iron Works Co., of Duluth, Minn., representing them on the road in the sale of the Campbell mixer.

The J. R. Alsing Co., 136 Liberty Street, New York City, are advertising "Something New," and the something new is the latest thing with them in the way of pulverizing mills, which they will be glad to tell you about if you will look up their advertisement and write them for further information.

The American Process Co., 62-64 Williams Street, New York City, seems to be having quite a marked success with the installation of sand dryers, etc. Among the recent installations is one of the Granite Brick Co., at Glen Falls, N. Y., manufacturers of sand-lime brick, a clay dryer for the Chattahoochee Chemical and Mining Co., of Girard, Ala., and a direct heat dryer for M. P. Hubbard & Co., Baltimore, Md., to dry lime refuse.

We have been honored recently with an illustrated catalogue issued by the Stedman Foundry and Machinery Co., of Aurora, Ind. This includes revolving screens, shaker screens, coal crushers, lime and gypsum disintegrators, and clay pulverizers and fertilizer machinery. This firm also announces that they are making a mixing machine for use in hydrating lime. Their lime grinders are too well known to the lime trade to require description here.

The Ross-Keller Triple Pressure Brick Machine Co., Fullerton Building, St. Louis, Mo., has a new catalogue just off the press, in which they invite special attention to the triple pressure feature of their brick machine, which they say has placed it in the front rank in the brick machinery trade. The catalogue is neatly gotten up, and illustrates and describes a variety of Ross-Keller machines for brick manufacturers. They will be glad to send a copy to any one interested in this kind of machinery.

The Advance Pump and Compressor Co., Battle Creek, Mich., have had such a heavy demand for their goods that they have been compelled to take steps to double the capacity of their plant. They inform us that they have a pump that is specially adapted to mines, because it takes care of itself without injury in case the load is suddenly removed by a leak in the suction pipe. This company expects to have an exhibit at the St. Louis Fair this year. Speaking of business, they say the outlook is fine and they expect to do a good business this year.

Willis Shaw, 171 La Salle Street, Chicago, Ill., has an excellent list of machinery bargains for sale, including hoisting engines, dump cars, graders, locomotives, steam shovels and dredgers, rock drills, core drills and channellers, engines, cranes, traveling derricks, cableways, concrete mixers, and almost everything you can think of in quarrying and working stone and rock products. The list at hand, he says, is only a partial list of what he has to offer, and about the middle of March he will have out a more comprehensive list to mail to any one interested in machinery bargains and wanting to buy.

We have received from the Raymond Bros. Impact Pulverizer Co., 143 Laflin Street, Chicago, Ill., catalogue No. 5, illustrating the Raymond automatic pulverizer of larger capacity, and also catalogue No. 6, which illustrates and describes the Raymond pulverizer of smaller capacity, both for screen and air separation. An important line with them is air separation, which can be used in many instances to good advantage, and a perusal of this catalogue will give the readers some good pointers in regard to the Raymond machines. If any further information is desired, they will be glad to furnish same on application.

Information Bureau

A Few of the Direct Inquiries Made to the Office of Rock Products During Last Month.

763.—We would like to communicate with firms selling coarse grit for rubbing marble; would prefer to buy direct from quarry.

764.—We contemplate putting in a sand loading and screening plant, and would appreciate any information that would be of service to us.

765.—I am in the market for the latest improved chain hoist.

766.—We are in the market for granite monuments.

767.—We want 12, 14 or 16-pound No. 2 T rails.

768.—We want grindstones.

769.—We want babbitt metal.

770.—We are in the market for belting.

771.—We need files.

772.—We need pulleys and shafting.

773.—Where can we get pipes?

774.—We want tanks.

775.—Where can I get a book treating on gypsum and its products, burning, slaking and the latest methods of hydrating lime?

776.—I have an A 1 plant for lime and dimension stone, which I would like to sell to some one with more advanced ideas on the subject of manufacturing.

Wanted and For Sale

One insertion, 25c a line; Two insertions, 50c a line; Three consecutive insertions with no change in the composition, 56c a line. Count eight words to a line; add two lines for a head.

WANTED—HELP.

SALESMEN—We want good salesmen all over the South for the Winget building block machine. Address A. D. MACKAY & CO., Chamber of Commerce, Chicago, Ill.

FOREMAN AND KILN BURNER for stoneware pottery in Southern States; state age, experience and wages expected. Address FOREMAN, care ROCK PRODUCTS.

MILLER—Sober working miller for natural cement and plaster plant that runs the year round; upper runner buhrs; man capable of keeping mill in repair. Address E. B. ALVORD & CO., Jamesville, N. Y.

SALESMAN AND MANAGER—An old established quarry for working high-grade building stone to cities along the Great Lakes; good position for hustler capable of estimating from plans and selling stone. Address RED STONE, care ROCK PRODUCTS.

WANTED—MISCELLANEOUS.

THE ADDRESSES OF PARTIES who have been illegally intimidated or restrained from the manufacture and use of HOLLOW CONCRETE BUILDING BLOCKS, or where a SINGLE lien has been filed on any building erected therewith *by any* inventor, patentee or manufacturer under any so-called "basic patents." Address NOYES F. PALMER MFG. CO., Brooklyn (E), N. Y., Manufacturer of Hollow Building Block Machinery.

WE WANT THE NAME of every party selling, buying or using any hollow concrete building block machines, as well as the location of every building erected with hollow concrete blocks, without our license, and for first information we will pay a reward. Address the Law Department of THE HARMON S. PALMER COMPANY, 1450 Binney Street, Washington, D. C., Owners of Basic Patents.

INFORMATION—Is your sand suitable for sand-brick manufacture? Let us test it and make you sample brick. Address JACKSON SAND BRICK CO., Jackson, Mich.

BUSINESS OPPORTUNITIES.

A PRACTICAL slate man to investigate our property with the view of taking an interest, and directing operations in the quarry and mill. The stock of the company is owned by six Boston men, none practical slate men, and all are occupied with their respective businesses. We believe we have a valuable property as slate quarries go, and one among the last of open cut quarries in the country of dark Maine slate of large size dimension stuff, and we want the co-operation of a man familiar with the slate business, a man who will take his share of the risks and profits. If satisfied, we will pay the expenses of right party to investigate property before entering into business relations with us. MAYFIELD SLATE CO., W. E. Osgood, secretary, East Milton, Mass.

I WANT to interest parties in wide ridge of white clay and red sand near here; crossed by railroad; will sell or trade. Address IKE A. CHASE, Memphis, Tenn.

FOR SALE—PLANT.

LET US SELL that plant for you. See head of department for rates.

BLUE STONE—Our entire plant, equipment, quarries, etc., for sale at a low figure; well located, good equipment, well established trade; quarries especially adapted to the production of large platforms and heavy rock; special car for transportation of large platforms; satisfactory reasons for selling. Address F. G. CLARKE BLUE STONE CO., Oxford, N. Y.

CEDAR GROVE MARBLE QUARRIES near Philadelphia; stone suitable for sawing, fluxing and manufacture of building and land lime. Address WM. W. POTTS, Swedeland, Pa.

CRUSHING PLANT, COMPLETE—Crusher, engine, boiler, elevator, pumps, cars, skips, belting, pulleys, shafting, derrick, cables, battery, in fact everything complete to operate a stone-crushing plant. Will be sold at a bargain if taken at once. Address CRUSHER, care of ROCK PRODUCTS.

LIME KILN.—110 barrels daily capacity, with 75 acres of land on L. & N. railroad in Eastern Kentucky; price cheap and terms reasonable. Address NEWALA LIME WORKS, Ganadarque, Alabama.

FOR SALE—MISCELLANEOUS.

HALF INTEREST IN QUARRY.—A half interest in the Burke Stone Quarry, near Hot Springs, S. D. A good-paying and well-advertised business; output past season, 425 cars; over 500 cars already contracted for 1904; business has doubled each year for the past four years; partner familiar with masonry work preferred, as present owner, owing to other duties, desires to relinquish the management. Plant consists of 280 acres of ground with no stripping. Saw plant, derricks, hoisting engines, etc. Present owner is unable, owing to other business, to give proper attention to the business. Address BURKE STONE CO., Deadwood, S. D.

FOR SALE—MACHINERY.

A BUCYRUS EXCAVATOR—A Standard Guage, 45-ton Bucyrus Steam Shovel, fitted with 32-ft. boom and a 1-cubic yard "Clam Shell" Bucket. Machine is complete and in A 1 condition, and can be shipped to destination on its own trucks. Located South. Price $3,200.00. Specifications and inspector's report on request. WILLIS SHAW—MACHINERY—CHICAGO.

HERE'S WHAT YOU WANT—Let me send you my February 24, Stock Sheet and price list of Machinery and Contractors' Plants. Prices are lowest yet. It's worth your while. Send for it. WILLIS SHAW—MACHINERY—CHICAGO.

SAND BRICK OR HYDRATING LIME—We furnish machinery and apparatus for making brick from sand, sandstone, shale, slag, or hydrating lime. W. E. CRUME & SON, Dayton, Ohio.

SEVERAL second-hand Pulsometer pumps, boilers, engines and miscellaneous machinery. Address MASLINS, 165 First Street, Jersey City, N. J.

VICTOR STEAM SHOVEL—Yard and one-half dipper; 45 h. p. boiler; shovel has been used but seven months. As we have no use for steam shovel, will sell cheap. Address VICTOR, care ROCK PRODUCTS.

FOR SALE

One seventeen horse power New Era gasoline engine, five years old, in the best of condition. One Fairbanks-Morse 54-horse power gasoline engine, also in the best of condition. This engine has been used only three or four years. Both of these engines were taken out of our plant within the last few months on account of the fact that we have substituted steam engines in order to get greater power. They can be seen at Toledo, Ohio, and as we have no use for them they will be sold comparatively cheap considering the excellent condition that they are in.

THE TOLEDO WHITE LIME CO.,

No. 220 North Erie St., TOLEDO, OHIO.

1904—The World's Fair Line—1904

SHE MUST HAVE BEEN A KENTUCKIAN.

"Where are you going, my pretty maid?"
"To the World's Fair at St. Louis, sir," she said.

"Over what line will you travel, my dear?" said he;
"Over the 'Henderson Route,' of course," said she.

"Why over that road do you go?" he said;
"For Free Reclining Chair Cars, sir," she said.

"And where flies this Palace of Travel?" said he;
"From Kentucky—through Evansville—to St. Louis," said she.

"You seem to be pleased with that line," he said;
"They are 'Good Service' originators, sir," she said.

"I'm traveling another route—'tis as good," said he;
"You'll have to 'show me,' kind sir," said she.

"All lines look alike to me," he said;
"I can only see one—'The Henderson,'," she said.

"I need me a helpmate, my dear," said he;
"Won't you travel to St. Louis, my wife, with me?"

"I doubt not a helpmate you need," said she;
"But the 'Henderson Route Comfort Line'—for me."

"Then, you will not come my way?" he said;
"No, I'm for the 'Henderson' any day," she said.

"Is the choice of routes more than my love?" said
"No! but the *Choicest* of Routes *is*, dear sir," said she.

"How, then, can I wed you, fair maid?" he said;
"Get the 'Henderson Route' habit first," she said.

MORAL TO MEN—

This lady was undoubtedly
accustomed to the best,
and would have no other—
Therefore—if you would
wedded and happy be, "Get
The 'Henderson Route' Habit"—
'Tis a good habit to acquire.

THE GILMORE PAT.
ALL SIZES
THE SIMPLEST & MOST EFFICIENT TUBE SCRAPER ON EARTH
$1.00 PER INCH OUTSIDE DIAMETER OF TUBES
BOILER TUBE SCRAPER
CUTS THE SCALE CARRIES ALL ACCUMULATIONS FORWARD. CLEANS THE TUBE AT ONE OPERATION

KEEP YOUR BOILER TUBES CLEAN AND SAVE YOUR FUEL

THOUSANDS IN USE

ASK ABOUT IT.

Gilmore Tube Scraper Co.,
200 Terrace Street,
BUFFALO, N. Y.

W. H. RHAWN, Prest. J. K. SHARPLESS, Treas. C. E. RANDALL, Sec'y.

Catawissa Car and Foundry Co.

CATAWISSA, PA., U. S. A.

Car Wheels, Castings, Forgings, Flat Cars, Mine and Dump Cars.

AND ALMOST ANY ARTICLE OF COMMERCE OF WOOD OR IRON, OR BOTH.

Orders Promptly Filled. Inquiries Solicited.

Welsh Flooring Quarries

MADE BY
I. C. EDWARDS, RUABON, N. WALES.

Best in the world for color and wear. Red, black, buff, 9 x 9 inches, 9 x 4½ inches, 6 x 6 inches, 4 x 4 inches.

Victoria Keene's Cement

MADE BY CAFFERATA & CO., ENGLAND.

No. 2, (pinkish gray) for gauging mortar and finishing walls.
No. 1, (white) for finishing walls.
Fine, (white, quick-setting) for mouldings, castings, etc.
Coarse, (pinkish gray) for the background of artificial marble.
Superfine (pure white) for the colored face of artificial marble.

General Agent and Importer for U. S. A. and Canada
W. H. REVIS, 1133 Broadway, New York.

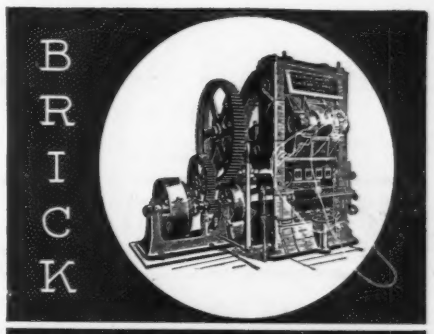
Book of Credit Ratings and Financial Reports

FOR THE GRANITE AND MARBLE TRADE.

New edition just issued. Send for subscription rates. References, any of the Leading Granite Manufacturers.

UNITED MERCANTILE AGENCY,

A. M. HUNT & CO., Proprietors,
131 Devonshire Street, BOSTON, MASS.



BOILERS and ENGINES

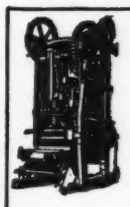
Tanks, Stacks, Standpipes and Sheet-iron Work.

Shafting, Pulleys, Gearing, Boxes, Hangers, etc.
Building Castings—cast every day.

Capacity 300 hands.

Large stock of Pipe, Pumps, Injectors, Valves, and Fittings.

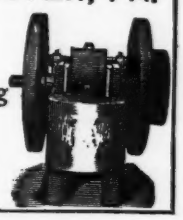
LOMBARD FOUNDRY, MACHINE and BOILER WORKS, Augusta, Ga.



The Henry Martin Brick Machine MANUFACTURING CO., Inc.

LANCASTER, PA.

ROCK CRUSHERS.



Fire-BRICK MACHINERY-Paving

CEMENT MIXERS, ELEVATORS, WHEEL BARROWS, ETC.

SEND FOR COMPLETE CATALOGUE.

THE WINGET
BUILDING BLOCK MACHINE.

PATENTS GUARANTEED.

AUTOMATIC. Forms mould, relieves block and removes cores by revolving gear. Three seconds to relieve, two seconds to form.

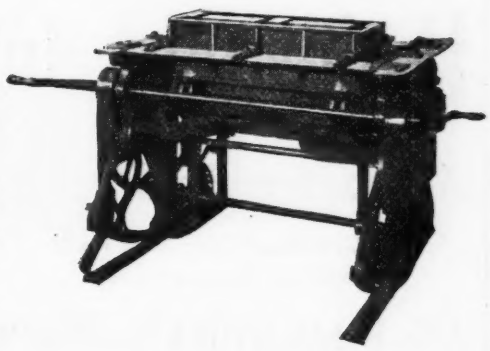
ADJUSTABLE. Makes hollow blocks for 8, 10, 12, 14, 16 and 18 inch walls. 4-in. veneer blocks. 45 degree angle block. Porch column block 12 and 16-in. square. Circular block dif. deg. radius. Caps and sills up to 48-in. Special plate.

FACING with half-inch veneer of 2 to 1 concrete made easy by tilting adjustment. Facing can be colored to imitate natural stone.

FLUES. Clear bottom to top. Available for ventilation. Fire flues, piping or wiring.

JOISTS. Supported, ground to roof by solid column of cement

CAPACITY. Blocks equivalent in area to 6,000 brick—10 hours—4 men.



A. D. MACKAY & CO.,
404 Chamber of Commerce, CHICAGO, ILL.
General Sales Agents.

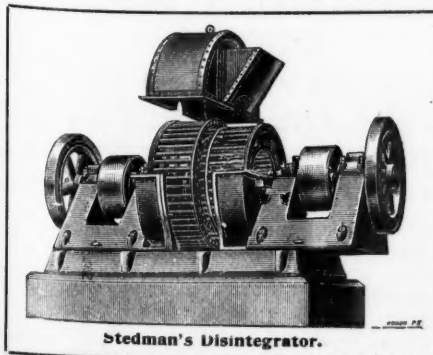
SPEIDEL'S ECONOMIC SAFETY HOIST

is simple in construction, practical in operation and never gets out of order. It's the quickest acting hoist made. It will outlast two hoists of any other make as the quality of the raw material is the very best that can be produced, and do more work—do it better, quicker and cheaper, too.

These are broad statements, but we have the facts to back them up, and will be glad to prove them to your satisfaction.

BOOKLET FREE.

J. G. SPEIDEL, Reading, Pa.



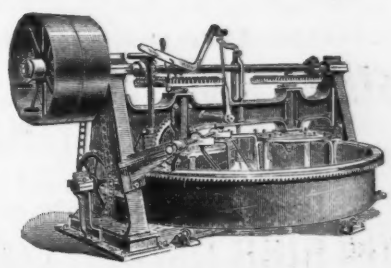
Stedman's Disintegrator.

OUR Disintegrators

grind Lime, Hydrated Lime and Gypsum, Fertilizer, Coal and Clay.

Our Mixers are well ADAPTED to both WET and DRY mixing, wet or dry slaking of lime. A fine mixer for mortar and plaster. An ideal fertilizer mixer.

The **STEDMAN FOUNDRY & MACHINE WORKS,**
AURORA, INDIANA.



Stedman's Double Mixer.

The best claims our competitors make, is, that their Mortar Colors are as good as

"RICKETSON'S."

We absolutely manufacture the strongest and highest grade

Mortar Colors and Mineral Paints

in the market. Contain more coloring properties than any other.

RICKETSON MINERAL PAINT WORKS
MILWAUKEE, WIS.

Jamestown Paint and Varnish Co.,
JAMESTOWN, PA.

Manufacturers of

MORTAR COLORS.

All Shades, Both Dry and Pulp.

"SPECIAL SHADES FOR COLORING SAND BRICK."

Brick and Mortar

COLORING

All Shades
Finest Quality
Dry and Pulp

WRITE FOR SAMPLES AND PRICES.

Clinton Metallic Paint Co.,
CLINTON, N. Y.

BOILLEAU & LYON,

Consulting Engineers,

First National Bank,

EASTON, PA.

Cement Properties—Analyses and Estimates

YOUR INQUIRIES ARE WELCOME.

COOPERAGE.

You make a great mistake in ordering your

STAVES, HOOPS, HEADING, NAILS, STAPLES, ETC.,

For Lime, Cement, Salt and other products, without writing to

THE BIBB BROOM CORN CO.
MINNEAPOLIS, MINN.

FACTORIES in Wisconsin, Minnesota, Michigan and Ohio.

SLATE.

SLATE { ROOFING. BLACK BOARDS, &c., &c.

DON'T Say Slate is too expensive until you ascertain what it can be delivered for f. o. b. at your Station. Advise us what you may be in need of and we will quote the very lowest prices. Handmade Slaters' Tools, Nails, Felt and Cement a specialty, and can be shipped with the Slate.

DAVID McKENNA, Slatington, Pa.

SLATE We Can Fill your Order for

Roofing Slate, Slate Blackboards, Structural, Electric and Plumbers' Slate.

Prompt Shipment, Good Material, Moderate Prices.

R. J. KICHLINE, Sales Agent. J. K. HOWER, Slatington, Pa.

JOHN G. WILLIAMS, Pres., Fair Haven, Vt.
H. F. ROHRMAN, Vice-Pres. and Treas., Zanesville, Ohio.
F. B. TORBERT, Sec'y., Zanesville, Ohio.

THE VERMONT SLATE CO.,

INCORPORATED.
MANUFACTURERS OF

Sea Green Roofing Slate

AND JOBBERS IN ALL KINDS OF
Black Slate, Black Boards, Etc.
GALVANIZED AND BLACK SHEETS,
CORRUGATED IRON AND STEEL ROOFING.

Granville, N. Y. and Zanesville, O.

Quarries: West Pawlet, Vt. Eastern Office: Granville, N. Y. Western Office and Warehouse: Zanesville, Ohio, Corner Main and Ninth Streets.

CHEMISTS AND ENGINEERS

FROEHLING & ROBERTSON,

Chemists, Chemical and Mining Engineers.

SPECIALTY—CEMENT AND CLAY PRODUCTS. Examination of Cement Properties, Analysis of Cement Raw Materials and Experimental Burnings, Plans, Specifications and Estimates of costs of Cement Plants, Cement Testing Analyses.

Office and Laboratories 17 S. Twelfth Street, Richmond, Va.

S. W. Shoop, Engineer & Machinist, Front Royal, Virginia.

Building patent lime kilns with mechanical draft for wood or coal a specialty. Saves at least 50 per cent of cost of production. Write for specifications and terms.

Hydrated Lime

—BY THE—

Automatic Process.

Cuts Expenses One-Half.
Product Guaranteed.

THE ELLIS HYDRATE COMPANY,
Boston, Mass.

ROBERT F. WENTZ, M. W. S. E.

CONSULTING ENGINEER AND

Expert Designer of Cement Plants.

Your consultation solicited for the inspection of materials, examination and reports of cement properties, the analysis and testing of cement and cement materials.

I can furnish you Plans and Specifications; Estimates of Cost; Superintendence of Construction; Preliminary Sketches of Cement Plants.

Address communications to ROBERT F. WENTZ, M. W. S. E.

Lock Box 15, NAZARETH, PA.

Tell 'em you saw it in ROCK PRODUCTS.

THE ONLY BOOK ON THE SUBJECT.

"ART STONE."

By F. W. HAGLOCH, Consulting Engineer in Concrete, Stone and Steel Construction.

Gives clear, concise and detailed instructions for making Hollow Concrete Building Blocks, Trimmings, Ornaments, etc.

Formulas for making and coloring stone in imitation of the products of all American quarries.

Every hand and machine process described in all its details. A catechism of over 100 questions and answers on making and moulding stone.

Brief reviews of patents bearing on the subject, to which is appended a glossary defining words, phrases and terms peculiar to the trade.

Cloth Bound. **PRICE, $1.50 Postpaid.**

ART STONE PUB. CO., Rose Building, Cleveland, Ohio.

NATIONAL WALL PLASTER CO.,

OF AMERICA

MANUFACTURERS OF

Gypsum and Calcined Plaster.

539 Onondaga County Savings Bank Building,

SYRACUSE, N. Y.

The Mosaic Tile Co.
Zanesville, Ohio.

MANUFACTURERS OF

FLOOR TILE

ALSO

GRAY PORCELAIN BRICK

FOR THE LINING OF
Ball and Tube Mills, Acid Vats, &c.

WRITE FOR SAMPLES AND PRICES.

Eastern Office: 508 Broome Street, NEW YORK, N. Y.

THE ATLANTA MARBLE COMPANY

QUARRY OWNERS, PRODUCERS AND FINISHERS,

Georgia White Marble.

Blocks, Any Size,

Sawed Stock Any Purpose.

Executive Office, Atlanta, Ga.

Mill and Finishing Works, Ball Ground, Ga.

"BIG FOUR"

THE BEST LINE TO

INDIANAPOLIS, PEORIA, CHICAGO,

And all Points in Indiana and Michigan.

CLEVELAND, BUFFALO, NEW YORK, BOSTON,

AND ALL POINTS EAST.

Information cheerfully furnished on application at City Ticket Office, "Big Four Route," No. 259 Fourth Avenue, or write to S. J. GATES, Gen'l. Agt., LOUISVILLE, KY.

Plymouth Gypsum Co.

FORT DODGE, IOWA.

Will Be Ready to Fill Orders in March.

INQUIRIES SOLICITED.

This is the New Independent Mill.

Has no connection with any Trust or Combine.

S. V. PEPPEL

Formerly Chemist Ohio Geological Survey

Consulting Chemist and Engineer

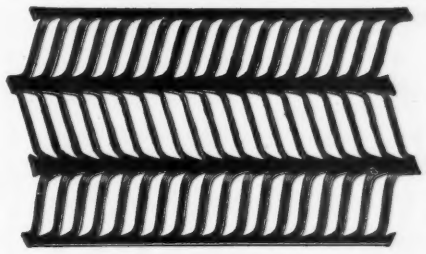
LOUISVILLE, KENTUCKY.

Care "Rock Products" 431 West Main Street.

I MAKE A SPECIALTY OF PROBLEMS IN THE Lime Industry.

Lime-Sand-Brick Industry. Portland Cement Industry.

COME TO ME WITH YOUR TROUBLES



Herringbone Expanded Steel Lath is much used for exterior concrete as well as interior work.

—MADE BY—

The General Fireproofing Co.
Youngstown, Ohio.

ROCK PRODUCTS

One Year $1.00.

Sand-Lime Brick

The Best Money Maker In This Country To-day

Plants installed complete on the AMERICAN SYSTEM equipped with AMERICAN MACHINERY, started and operated until 100,000 brick are made. Quality Guaranteed. No Failures. No Experimenting. No Royalties. No Secrets. No Chemicals. Send for Free Booklet.

AMERICAN SAND-LIME BRICK CO.

TEMPLE COURT BUILDING, CHICAGO, ILL.

NEW YORK OFFICE; 39 Cortlandt St. SOUTHERN OFFICE; City Bank and Trust Co. Bldg., Mobile, Ala. SAN FRANCISCO OFFICE; 501 Rialto Bldg.

Vitrified Sewer Pipe

Flue Linings, Building Blocks,
Stove Pipe, Chimney Tops,
Wall Coping, Etc.

The Best is none too Good—"We Make the Best."

Write us for particulars.
Refer to Rock Products.

The ROBINSON-GRAVES Sewer Pipe Co.

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STONE CHEAPER THAN BRICK.

Made under the new method without tamping or pressure on our machine which costs but

$50.00

We Make Seven Stones

in one operation 2 ft. 6 in.x9 in.x 10 in. No experiment; our work can be seen in thousands of buildings. **Send for detailed information.**

STEVENS CAST STONE CO.,

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Rooms 1529, 1530, 1531 and 1532, 150 Nassau St., NEW YORK, N. Y.

SLACK COOPERAGE STOCK.

CEMENT AND LIME STOCK

A SPECIALTY.

MILLS: New York, Ohio, Kentucky, Virginia, Pennsylvania, Michigan, Tennessee and North Carolina.

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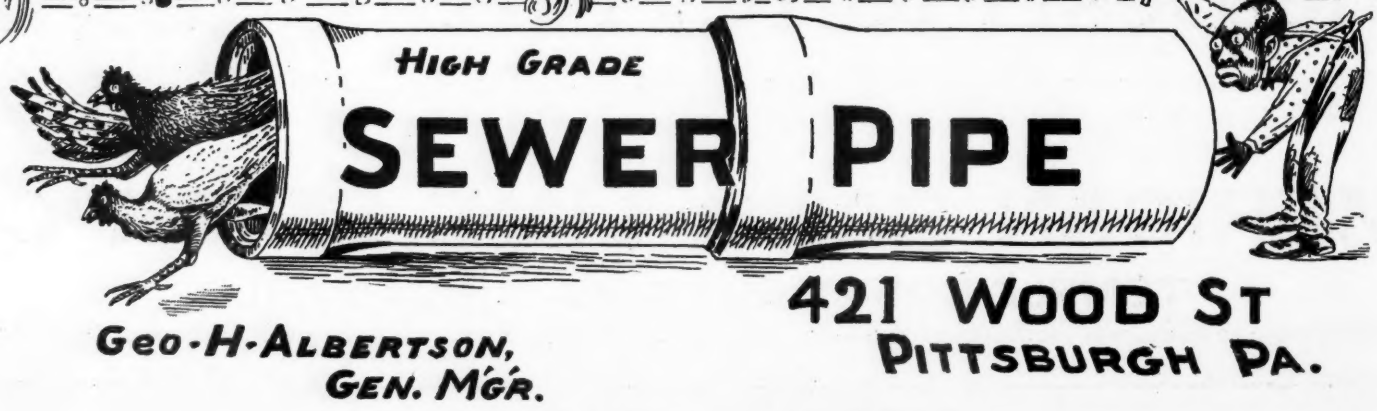

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Tell 'em you saw it in ROCK PRODUCTS.

Gypsum Machinery

A fine and complete line of Modern Machinery.

KETTLES, CRUSHERS, NIPPERS, ETC.

We are now building the new Plymouth Mill at Fort Dodge, Iowa, the finest mill in the United States.

ASK FOR CATALOGUE.

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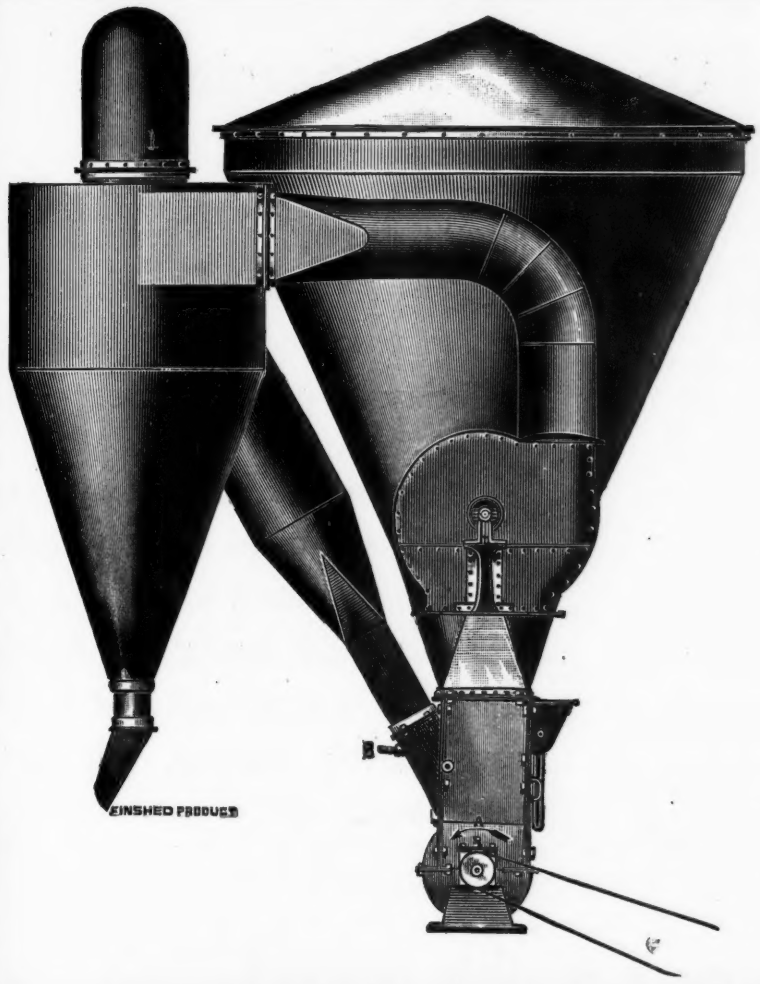
DES MOINES, IOWA.



The Raymond Patented Vacuum

Air Separator

Reducing and Separating Machinery of all sorts for handling very fine Material.

Separators of Special Designs for

Hydrated Lime
Air Separators for Cement Mills and Lime Plants,
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Special Exhaust Fans.

Grinding and Separating of any material to ANY FINENESS.

Absolutely dustless in operation.

THE RAYMOND BROS. IMPACT PULVERIZER CO.

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Saw Blades

Carefully Straightened and Cut Square and True. Ordinary Sizes Constantly on Hand.

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The Perfection Building Block Machine

For the manufacture of hollow and solid concrete building blocks. Makes blocks any size and shape without a crack or break in their surface. The only machine that will deliver the block on its side, a great advantage over other makes of machines. Ask for catalogue and price. State Agents wanted in every State in the Union.

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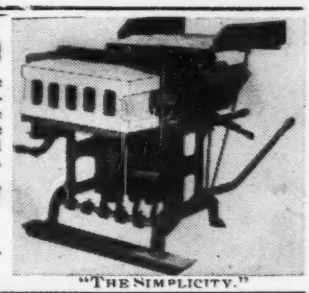
Manufacturers of all kinds of Sand Working Machinery, Mixers, Screens, Dryers, Conveyors, Etc.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"HAWK" Brand STEEL for POINTS, CHISELS, DRILLS, Etc.

Trade-Mark—1897—Registered.

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Every Description of Steel.

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The BRENNAN ROCK and ORE CRUSHER

WRITE FOR CIRCULAR.

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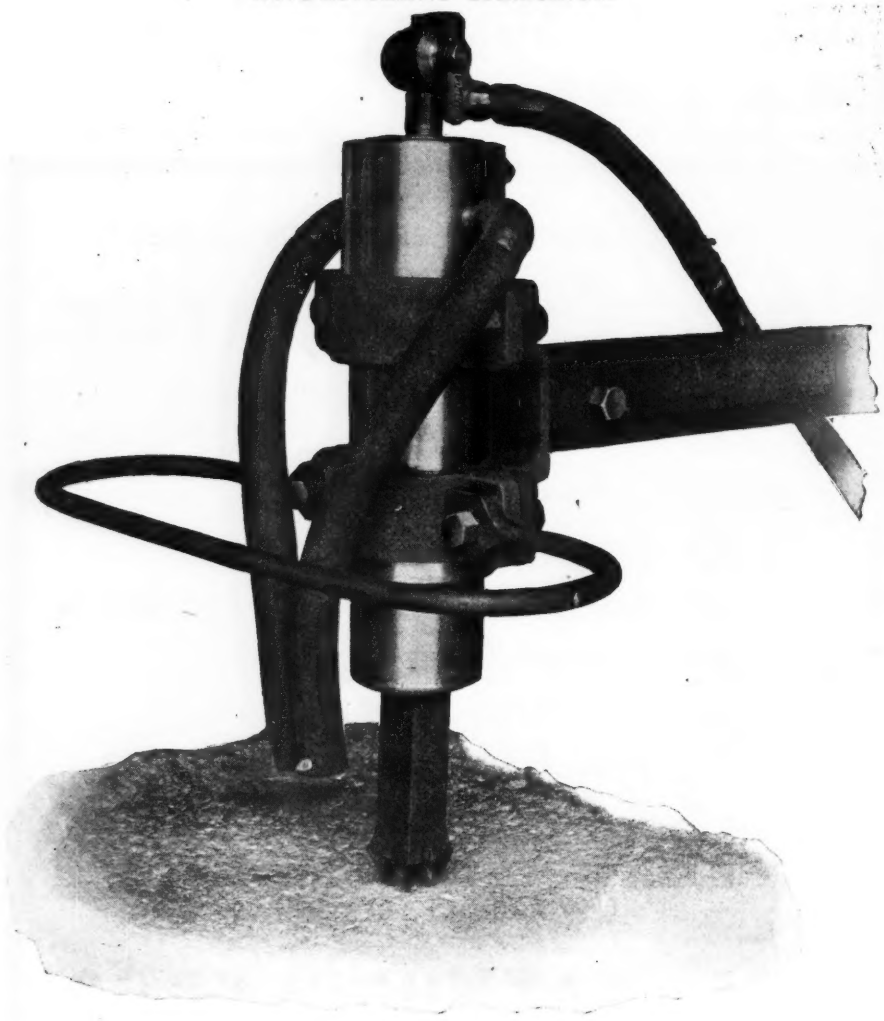
Dallett Surfacing Machines.

NOTE AUTOMATIC LUBRICATOR.



Our No. 2 "Special"

surfacer, the tool of which is shown herewith, represents the most marked and radical advance that has been made in this class of machinery for years.

He who would be successful in these days of close competition cannot afford to install or continue using apparatus that will not permit the greatest possible output per man, per hour.

The "Dallett" is pre-eminent in this respect and stands in a class by itself.

Thos. H. Dallett Co.,

York Street and Sedgley Avenue, PHILADELPHIA, PA.

Tell 'em you saw it in ROCK PRODUCTS.

It is a Fact

That the deserved success of the Harmon Palmer Concrete Building Block is phenomenal. Homes, factories and stores and churches are built and under construction all over the country. People living in them speak of the evenness of temperature and freedom from dampness. Hygienic in every way.

We have imitators and infringers, but the world looks to the original inventor always. Over four hundred machines have been sold in the last eighteen months, and our patrons write that they are doing an immense business.

Write for Catalogue.

HARMON S. PALMER CO.,

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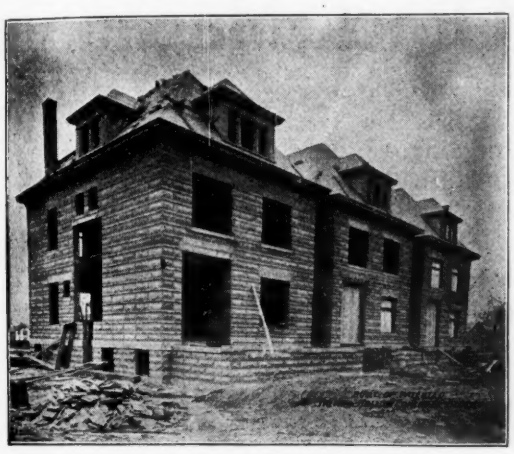
Houses built on Braddock Avenue, Pittsburg, Pa. for Mr. Krountz of the Columbia Bridge Works.



WANTED.

We want the name of every party selling, buying or using any HOLLOW CONCRETE BUILDING MACHINES as well as the location of every building erected with HOLLOW CONCRETE BUILDING BLOCKS, without our license, and for first information we will pay a reward. Address the Law Department of

THE HARMON S. PALMER CO.,
1450 Binney Street,
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Owners of Basic Patents
H. S. PALMER.

Send for Booklet on Patent Claims for your own protection.

Stucco Retarder.

Our Stucco Retarder is the Oldest, Strongest, and most Uniform Retarder on the market to-day. A trial order will convince you.

PREPAID SAMPLE SENT UPON REQUEST.

CHEMICAL STUCCO RETARDER CO.,

Incorporated 1895. WEBSTER CITY, IOWA.

Swindell Patent Lime Burner

and Swindell Patent Water Seal Gas Producer.

The only successful method of Burning Lime with Producer Gas.

40 per cent. increase in output of Kilns.
30 per cent. Saving in Fuel.

Eight Kilns in successful operation for past seven months at Toledo White Lime Co.'s plant, Martin, Ohio.

WM. SWINDELL & BROS.

German National Bank Building, PITTSBURGH, PA.

H. ACKERMAN, President. L. V. UNCAPHER, Secretary. J. W. THEW, Treasurer.

The Central Ohio Lime and Stone Co., of Marion, Ohio.

Capital $150,000.

We own One Hundred and Seventy Acres of the best and choicest lime and stone land in Central Ohio. The plant is located north of the city on the Pennsylvania R. R. We are now operating our plant with a large force of the most experienced men that can be found anywhere.

We produce and have the statements to show that we have the best white lime that is on the market. Our furnace stone is pronounced by experts and consumers to be the best they have ever used.

Our kilns and crusher plant are now in full operation and we solicit your patronage. We guarantee our product to be as good as the best, give us a trial order and be convinced of our statement. All orders placed with us will receive prompt attention.

THE CENTRAL OHIO LIME AND STONE CO.

The J. B. Ehrsam & Sons M'f'g Co.

Builders of Complete Gypsum and Cement Plaster Mills, Rock Crushers, Calcining Kettles, Plaster Mixers, Hair Pickers, Elevating and Conveying Machinery, Power Transmitting Machinery of all kinds. :: ::

ENTERPRISE, KANSAS.

WE MANUFACTURE

The Finest Qualities Dry Mortar Colors,

Red (2 shades,) Black, Buff, Brown, also Makers of Graphite

Mineral Red and Purple Oxide Paints.

Samples and Prices furnished upon application.

We protect the Dealers.

Tell 'em you saw it in ROCK PRODUCTS.

Buckeye Portland Cement Co.

ESTABLISHED 1888.

Manufacturers of the celebrated "Buckeye" brand of

Portland Cement

"Buckeye" has stood the wear and tear in many important places for the past fifteen years and under the new process of manufacture is now better than ever :: :: ::

WE INVITE YOUR CORRESPONDENCE.

Bellefontaine, Ohio.

THE OMEGA PORTLAND CEMENT CO.

F. M. STEWART, President.
ISRAEL WICKES, Vice President.
GEO. H. SHARP, Superintendent.
HOMER C. LASH, Chemist
CHAS. F. WADE, Sec'y-Treas.

OMEGA PORTLAND CEMENT CO. — STRENGTH, UNIFORMITY, DURABILITY — JONESVILLE MICH.

JONESVILLE, MICHIGAN.

The Best Portland Cement Is

LEHIGH PORTLAND CEMENT COMPANY — LEHIGH PORTLAND CEMENT — ALLENTOWN, PA.

"LEHIGH"

MANUFACTURED BY

Lehigh Portland Cement Co.

ALLENTOWN, PA.

Write for Catalogue.

Capacity, 4,000,000 Yearly.

Crushed Rock, Macadam

For Road Building. Ballast for Rail Roads. Rip Rap for River Work and Levee Building. Rubble Stone for Foundation Work. Manufacturers of Lime and Dealers in Cement and Plaster. No order too small for our careful attention. None too Large for our consideration.

THE ALTON LIME AND CEMENT CO.

ALTON, ILLINOIS.

3500 CUBIC FEET

of West Rutland, white, light, blue, pink and green Marbles in mill blocks have recently come on my hands to sell. Must sell same at once, and shall let them go at a bargain. Do not delay.

G. P. Eastman,

RUTLAND, VERMONT.

Am about ready to put on the market mill blocks of above description which I am soon to begin quarrying from the only developed and successful quarry (outside those of the Vermont Marble Company) which is capable of producing these well-known marbles.

Chicago Portland Cement Co.

CHICAGO PORTLAND CEMENT COMPANY — AA CHICAGO PORTLAND CEMENT — OFFICES CHI. STOCK EXCHG. BLDG.

MANUFACTURER OF . . .

"CHICAGO AA" PORTLAND CEMENT.

We make one brand only. The best that can be made.

BANNER CEMENT CO.,

MAKERS OF THE FAMOUS BANNER BRAND OF

LOUISVILLE CEMENT.

Guaranteed that 90 per cent. will pass a ten thousand Mesh Sieve.

WE SELL TO DEALERS ONLY.

GENERAL OFFICE: MASONIC TEMPLE, CHICAGO, ILL.

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WHITE LIME ASSOCIATION

MANUFACTURERS OF

High Grade White Lime.

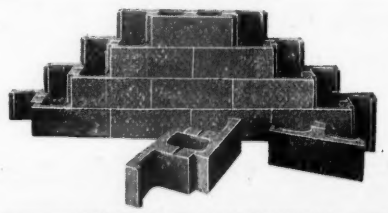
KANSAS CITY, MISSOURI.

CHARLES W. GOETZ LIME & CEMENT CO.

MANUFACTURERS OF AND DEALERS IN

Glenwood Lime, Banner Brand Louisville Cement, Portland Cements and Building Materials.

St. Louis, Mo.



REVOLUTION IN BUILDING.
Fire Proof Buildings with
HOLLOW CONCRETE WALLS.

That will last for all time. You furnish seven parts of sand and gravel (or broken stone), one part cement, seven men (six unskilled) and we do the rest. Making by hand labor 1,000 square feet of Fire-proof wall in a 10 hour day. Ready for laying in 10 days. No burning—simply turn on the hose. No power necessary. Reward for proof of infringement. Patent Guaranteed.

THE AMERICAN HYDRAULIC STONE CO. Century Bldg., Denver, Col.

Tell 'em you saw it in ROCK PRODUCTS.

The Ohio Lime Company,

MANUFACTURERS OF AND WHOLESALE DEALERS IN

WORKS AT
Fostoria, Ohio.
Gibsonburg, Ohio.
Sugar Ridge, Ohio.
Tiffin, Ohio.
Woodville, Ohio.

**Ohio White Finishing Lime,
Ground Lime, Lump Lime,
Fertilizer, Hydrate Lime,
Cement, Plaster,
Hair, &c.**

Capacity
3500 Barrels
Per Day.

OFFICE:
209-210-211 CHAMBER OF COMMERCE BUILDING.

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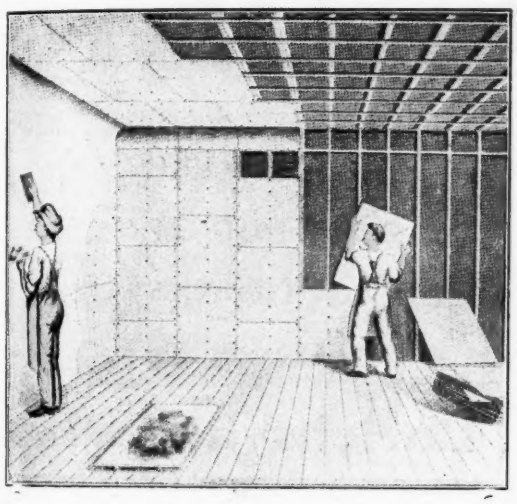


Sackett Plaster Board

A material used in the construction of Walls and Ceilings in place of wood and metal lath. Made in Sheets 32" x 36", ¼" thick. Nailed directly to studding and finished with hard plaster.

Sackett Plaster Board is light, economical and durable. Will not warp, buckle or shrink. Is warmer than lath, consequently saves fuel. Is a fire retardent recognized by fire underwriters.

Walls and Ceilings constructed with these boards cannot fall.

GRAND RAPIDS PLASTER CO.

Manufacturers of Wall Plasters,
Calcined Plasters and other Gypsum Products.

WESTERN SALES AGENT.
GRAND RAPIDS, MICH.

Big B Lime.

BIG B LIME

ITS STORY OF SUCCESS.

OUR COMPANY:
The Norris and Christian Stone and Lime Company, Marion, Ohio, 20 years of experience.

OUR PLANTS:
Three plants comprising seventeen kilns, with daily capacity of 6000 bushels.

OUR RAILROAD FACILITIES:
Pennsylvania Company; The Big Four System; The Erie System, 3 Divisions; The Hocking Valley; assuring prompt shipments.

OUR LIME:
Cool working, free slaking, suitable for all purposes. Popular for SAND LIME brick. Sold in bulk and in barrels.

OUR STONE DEPARTMENT:
Crushed Stone for Macadamizing, Railroad Ballast, special sizes for Concrete, White Fine Screenings for Driveways and Parks.

THE NORRIS AND CHRISTIAN STONE AND LIME CO.

MARION, OHIO.

Tell 'em you saw it in ROCK PRODUCTS.

MASTIC

THE NEW PROCESS

Wood Fiber Wall Plaster.

A Winner from the beginning. Architects and Artisans unite in its praise. The demand for this famous brand of wall plaster fast becoming universal. Formulas and machinery protected by U. S. letters patent. Territory rights to manufacture for sale on reasonable terms. Plans and specifications for new mills furnished. Machinery supplied and located at minimum cost. Trade supplied with MASTIC from our mills. If this looks good to you write

The Ohio Wood Fiber Plaster Co.

COLUMBUS, OHIO.

Stucco Retarder.

A stucco retarder absolutely uniform in strength. Strongest retarder made. Insures a slow and *gradual* set. Samples free for tests. Information concerning plaster formulas furnished.

The Ohio Retarder Co.,

PORT CLINTON, OHIO.

STUCCO RETARDER.

We are the largest manufacturers of retarder in the world. Our goods are both strong and uniform. If you have not already tried them send for sample. Freight prepaid to any point in the United States or Canada.

THE BINNS STUCCO RETARDER CO., Uhrichsville, Ohio.

WOOD PLASTER

The Coming Wall Covering

WE ARE THE ORIGINATORS.

After several years of experimental work we have reached

SUCCESS

and our goods are recognized as of the highest quality.

We wish to establish our trade in every important market, and will give local capital and local talent an opportunity to go in with us in the erection and operation of

MIXING PLANTS

Using our IMPROVED MACHINERY and FORMULAS.

The management of the local plant to remain with LOCAL INTERESTS.

We now have in operation two plants of large capacity and TWO OTHERS ARE BUILDING.

We would be pleased to open up correspondence with anyone interested in the building trade.

Wood Plaster can be furnished on short notice from any of our mills at competitive prices.

Address all communications to

The ELYRIA WOOD PLASTER CO.

47 MERWIN STREET, CLEVELAND, OHIO.

United States Gypsum Co.

General Offices, 184 LaSalle Street, CHICAGO, ILL.

Manufacturers of

WALL PLASTERS

Unsanded

Alabaster Cement Plaster.
Big 4 Cement Plaster.
Diamond Cement Plaster.
Duncombe's Cement Plaster.
Flint Cement Plaster.
Granite Cement Plaster.
Ivory Cement Plaster.
Imperial Cement Plaster.
K. & N. Cement Plaster.
O. K. Cement Plaster.
Rock Cement Plaster.
Roman Cement Plaster.
Red, White and Blue Cement Plaster.
Waterloo Cement Plaster.
Zenith Cement Plaster.
Baker Cement Plaster.

Prepared WALL PLASTERS Sanded.

Adamant Wall Plaster.
Big 4 Wall Plaster.
Diamond Wall Plaster.
Granite Wall Plaster.
Ivory Wall Plaster.
Imperial Wall Plaster.
Rock Wall Plaster.
Zenith Wall Plaster.
Baker Wall Plaster.

BRANCH OFFICES: Ft. Dodge, Iowa; New York Life Bldg., Omaha, Neb.; 480 Virginia St., Milwaukee, Wis.; Lumber Exchange, Minneapolis, Minn.; Foot of Tower Ave., West Superior, Wis.; Hammond Bldg., Detroit Mich.; Indianapolis, Indiana; Sandusky, Ohio.

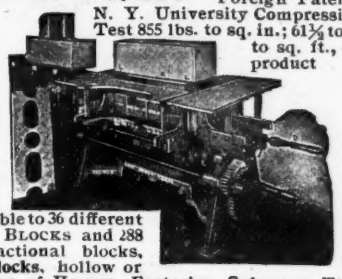
Palmer Adjustable Cast-Stone-Press

Fig. 44. KEMP MANUFACTURING CO. Main Building, 80 x 250 feet.

CAST STONE PRESS 14 American and Foreign Patents

N. Y. University Compression Test 855 lbs. to sq. in.; 61¼ tons to sq. ft., on product

Noyes F. Palmer Adjustable Mold Press



Agency and territory with first machine. Patents protected or money refunded. Adjustable to 36 different full size BUILDING BLOCKS and 288 different size fractional blocks, **Cured Concrete Blocks**, hollow or solid, for the erection of Houses, Factories, Subways, Tunnels, Bridges, Power Plants, Breweries, Docks, Retaining Walls, etc., etc.

NOYES F. PALMER MFG. CO., BROOKLYN (E) N. Y.

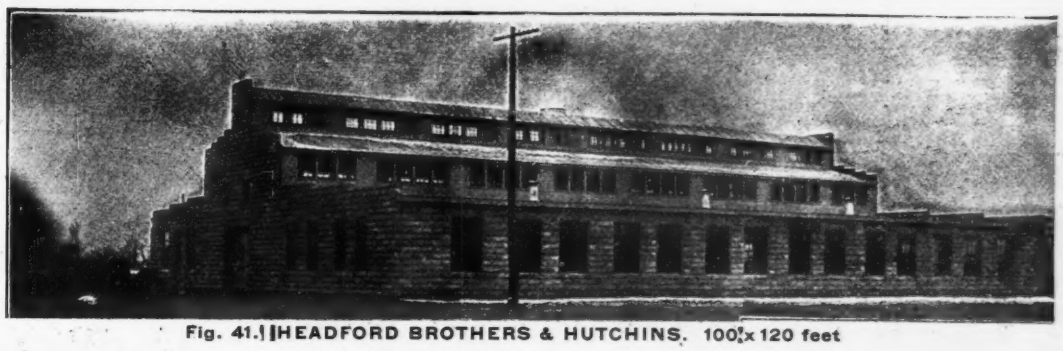


Fig. 41. HEADFORD BROTHERS & HUTCHINS. 100½ x 120 feet

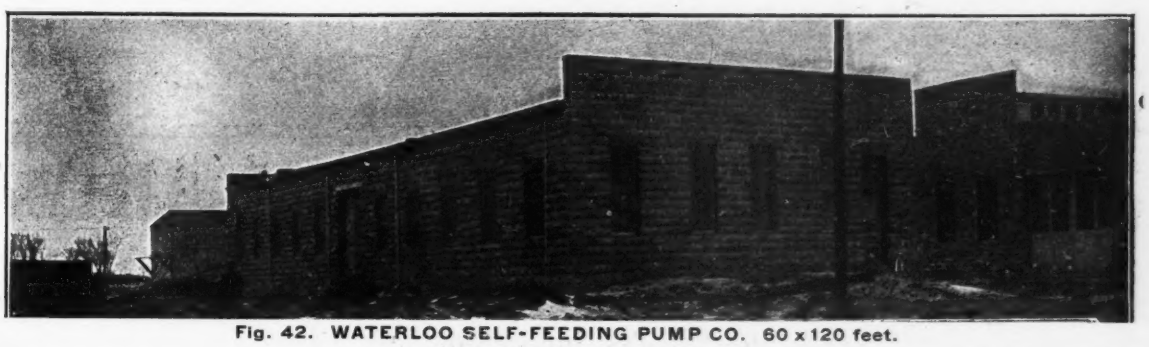


Fig. 42. WATERLOO SELF-FEEDING PUMP CO. 60 x 120 feet.

All the buildings illustrated on this page are a few of the "14 Buildings," products for which were manufactured on 2 of our machines, operating about nine months [see catalog page 15.] We install machines at a reasonable price under a license agreement, and it is not necessary to purchase any patent-rights, Territory nor pay royalty. Invest in machines and product that have a record [see pages 11 and 19 catalog.] Architects, Builders and Capitalists will not experiment with cheap building blocks made on cheap machines [see page 22 catalog.] Secure Territory FREE to our customers under our License.

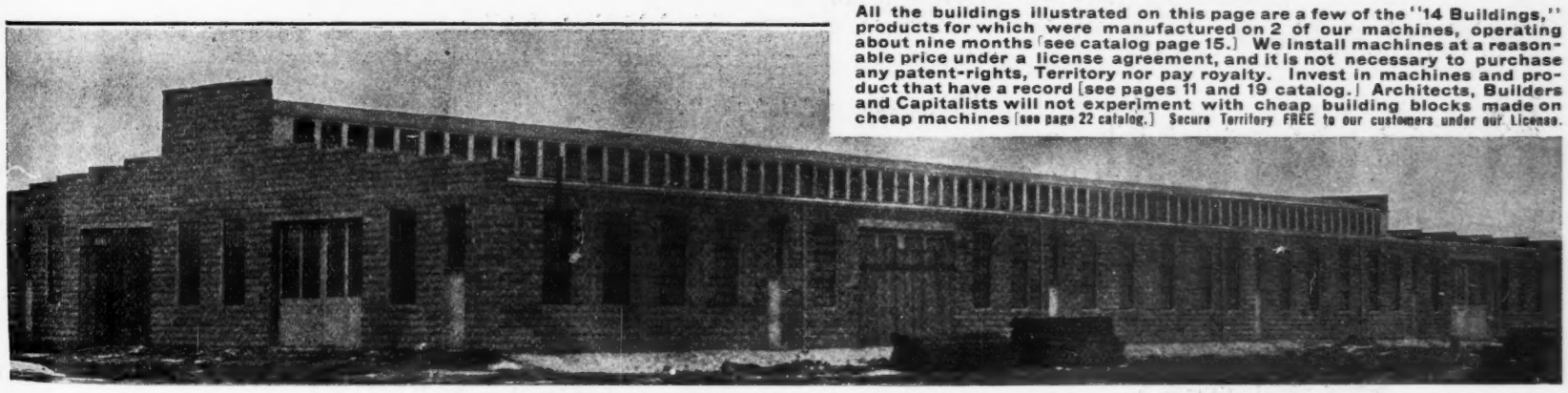


Fig. 43. WATERLOO THRASHING MACHINE CO. 100 x 300 feet.

Fig. 44. KEMP MANUFACTURING CO. Main Building, 80 x 250 feet.

NOYES F. PALMER MANUFACTURING COMPANY, Brooklyn, (E.) N. Y.

Tell 'em you saw it in ROCK PRODUCTS.

QUINCY GRANITE QUARRYMEN AND DEALERS.

JOHN C. BALLOU, QUINCY, MASS.

(Successor to Henry Barker & Sons.—ESTABLISHED 1865.)

MANUFACTURER OF AND DEALER IN

Rough and Finished Quincy Granite. Dark and Medium Granite a Specialty.

H. BARKER & BRO., Office 1009 Witherspoon Building, PHILADELPHIA, PA. Sole Agents for the "BALLOU" Stock in Pennsylvania, Delaware and Southern New Jersey.

1826 The Granite Railway Co. 1903

SOLE PRODUCERS OF THE FAMOUS

Dark Blue "RAILWAY" Granite

Monumental and Building Work of all Kinds,
Our Specialty—Fine Polishing—Prompt Shipments.

BATES AVENUE, WEST QUINCY, MASS.
Trains from track 21, South Station, Boston, at 16 minutes past each hour of the day.

Charles A. Swingle. John E. Ford.

SWINGLE & FORD

GRANITE DEALERS AND MONUMENTAL DESIGNERS.

Estimates given on all styles of monumental work.
Hand made designs, detail drawing, lettering and pen sketching executed on short notice.
QUINCY, MASS.

T. F. MANNEX,

PROPRIETOR OF THE FAMOUS

A. Reinhalter Extra Dark Quincy Granite Quarry.

Rough Stock for sale to the trade, also finished monuments, and every description of cemetery work. Rolls, Columns, Balls, Vases, Round Monuments, Balusters, etc. Turned and Polished.

T. F. MANNEX, West Quincy, Mass.

JOSEPH BISHOP

Manufacturer and Wholesale Dealer in

Quincy Granite Monuments

From Best Light and Dark Stock

INTERVALE STREET

QUINCY, - - - - - - - - MASS.

IF WHAT YOU WANT IS

CEMENT KNOWLEDGE,

Get the Directory of American Cement Industries and Hand Book for cement users. It is just what its name implies and will answer a lot of questions for you, as well as furnish you with a directory of cement dealers, users, etc.

Address, THE FRANCIS PUBLISHING CO.,
THE PRICE IS $5.00. 431 West Main St., LOUISVILLE, KY.

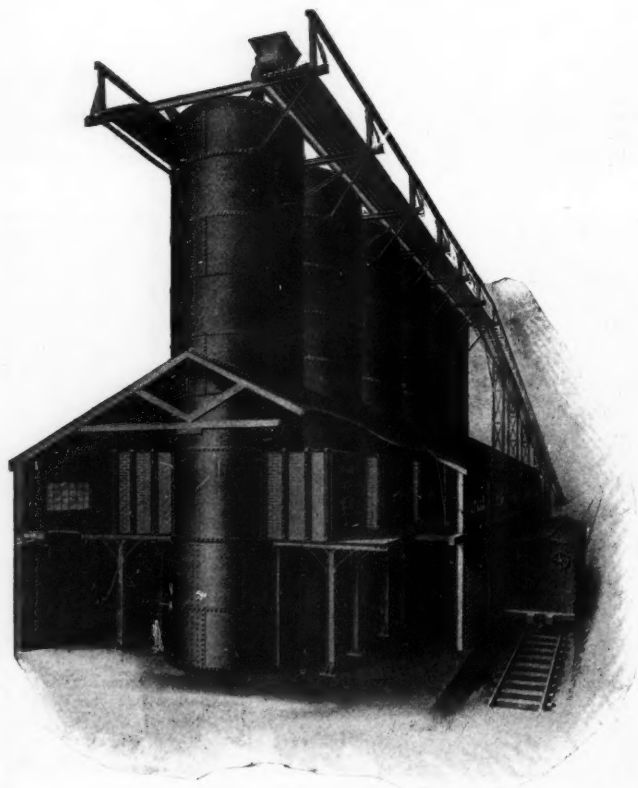
WHEELING WALL PLASTER CO.,

MANUFACTURERS AND JOBBERS

Wheeling Plaster and Builders Supplies.

WHEELING, = = WEST VIRGINIA.

Broomell's Patent Keystone Continuous Burning Lime Kiln.



Battery of six kilns showing building, incline and top platform. This cut was made from a battery of kilns in actual operation. Any number of kilns can be placed in a battery.

Manufactured by

Broomell, Schmidt & Steacy Company,

YORK, PENNSYLVANIA.

Will burn lime rock in the most economical manner with bituminous coal, wood or producer gas as fuel.

No foundation required above the ground level, self-supporting, made from heavy steel plates reinforced with steel angles and posts, lined with special fire bricks for which drawings are furnished.

The only complete, practical, first-class, self-contained lime kiln ever made.

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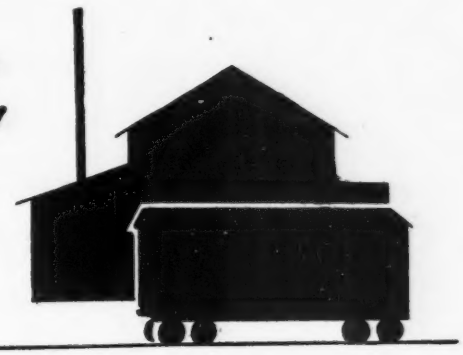

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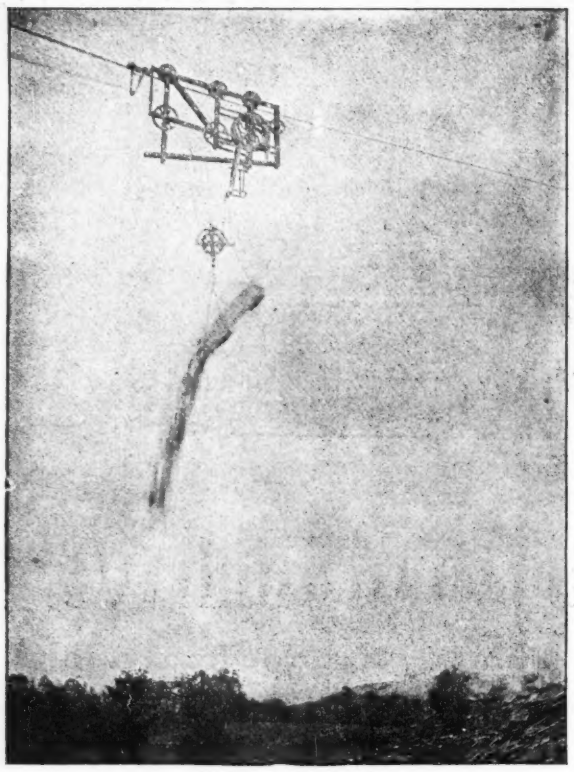

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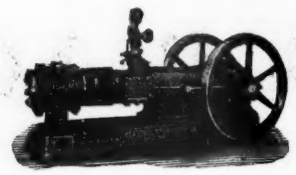

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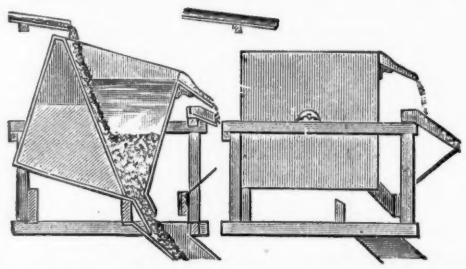

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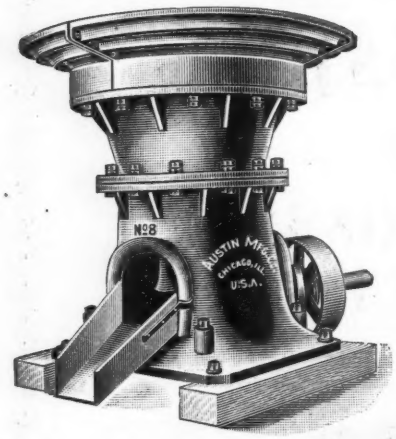

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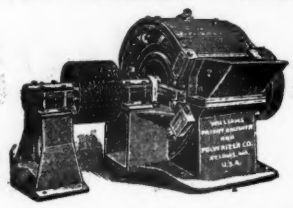

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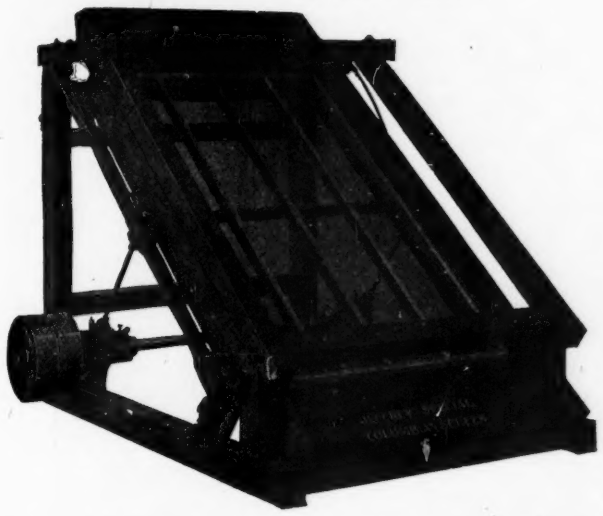

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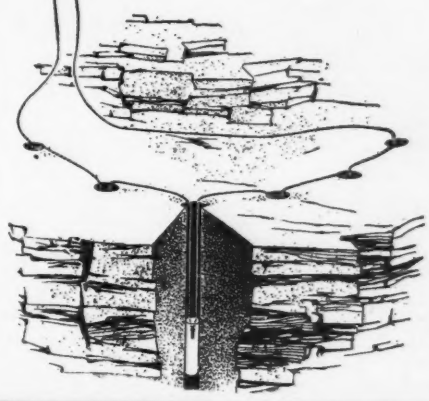

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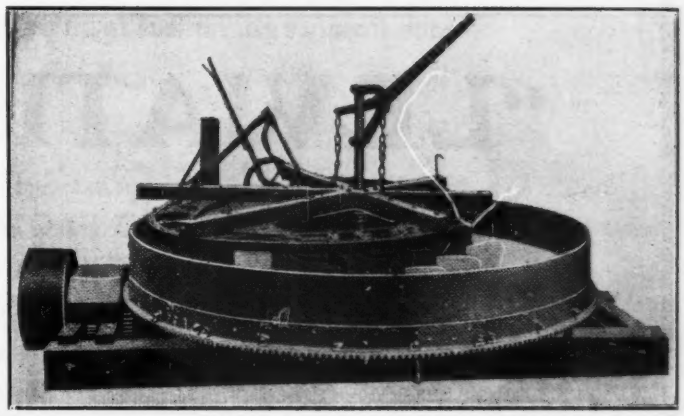

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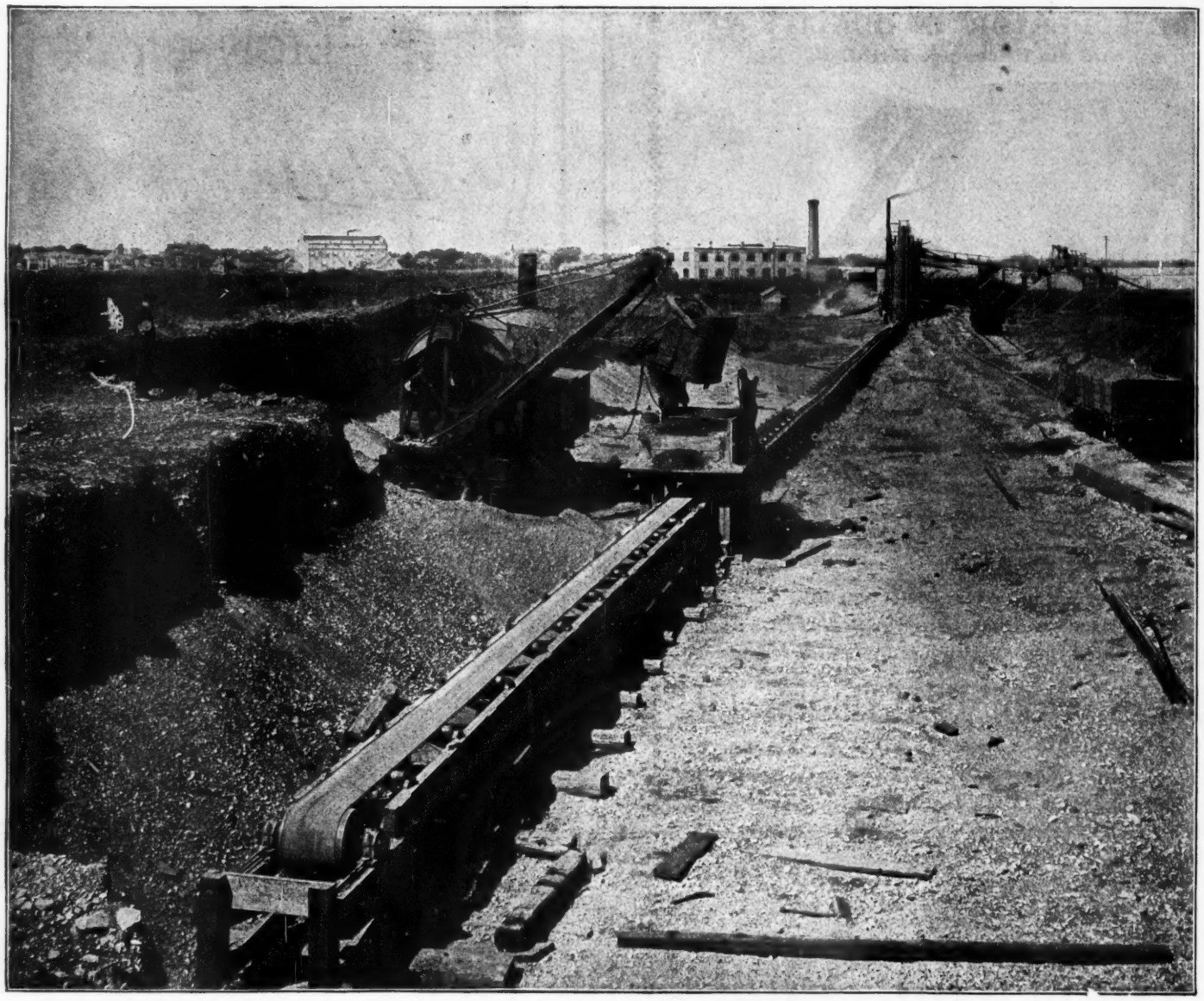

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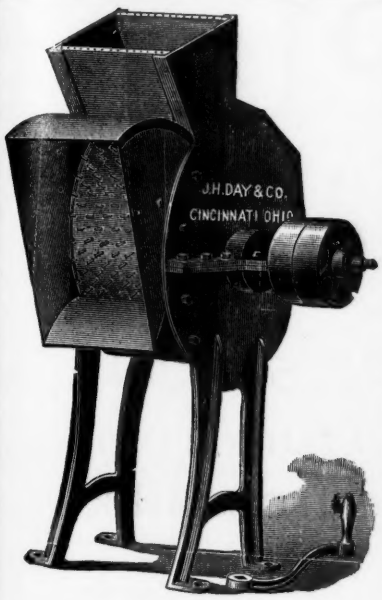

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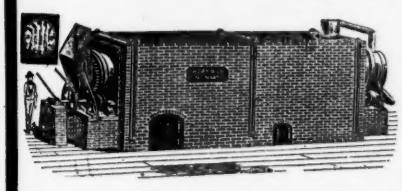

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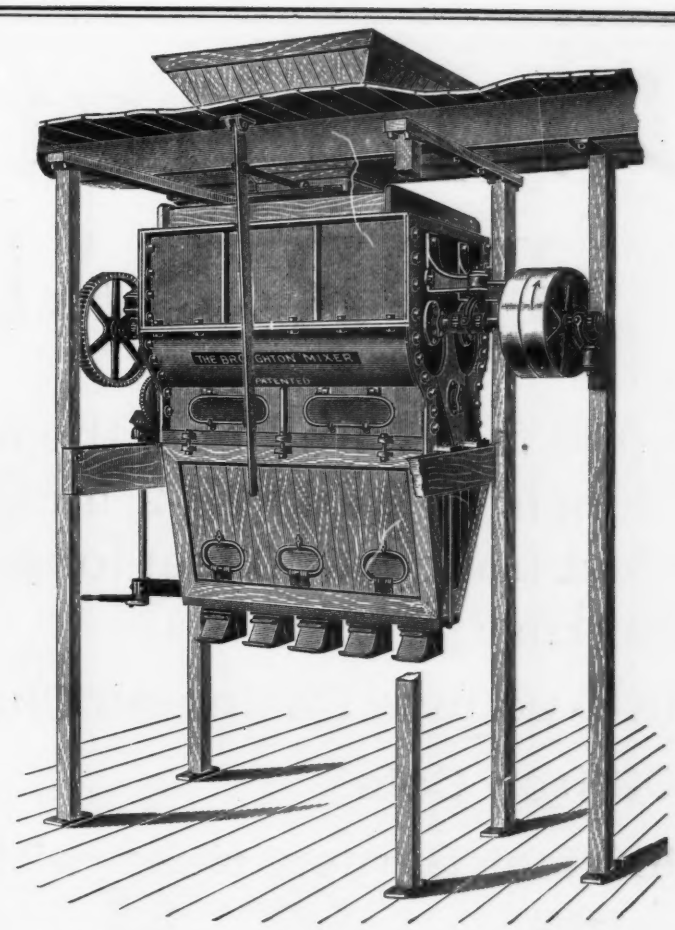

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It is the only Hydrated Lime that will not swell in the sack.
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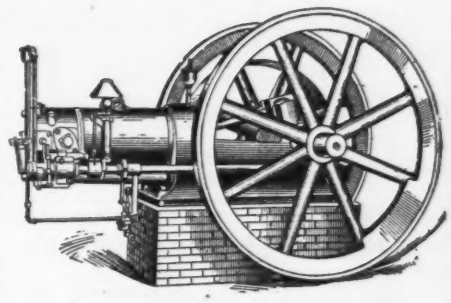

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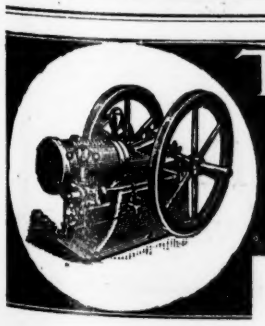

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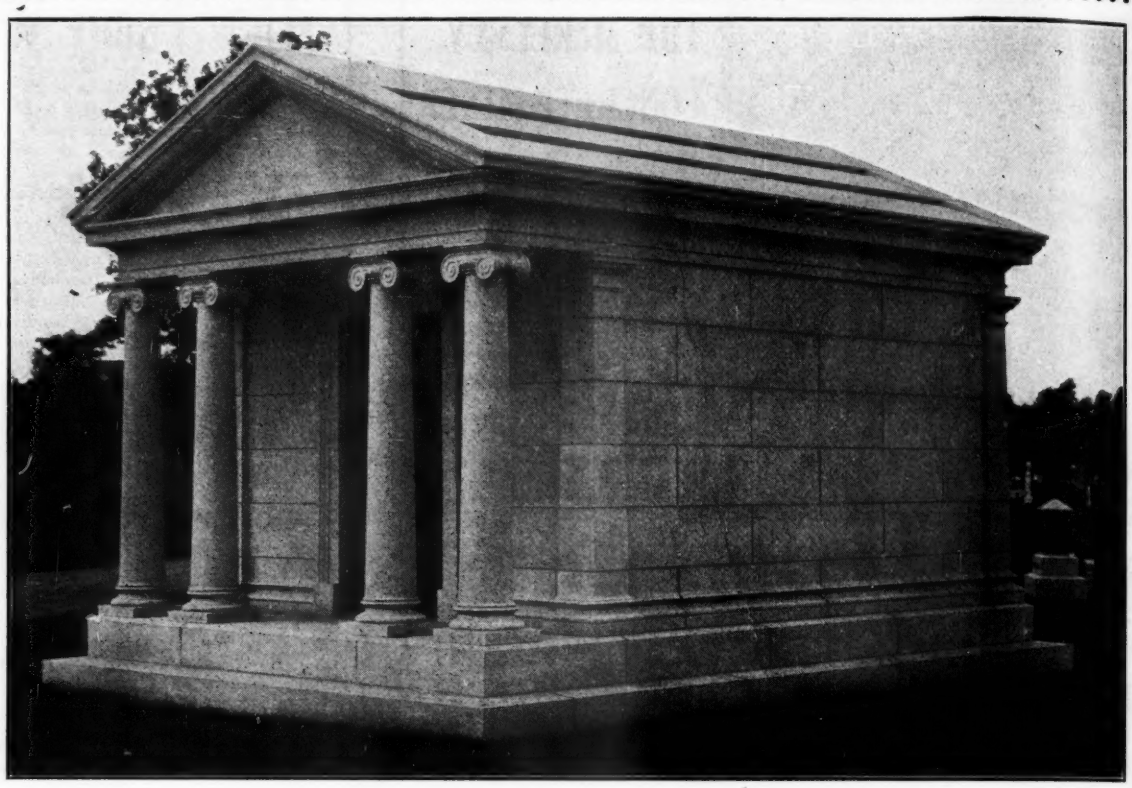
Write us for Estimates on anything in Barre Granite.



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Rough, Cut and Sawed Sand Stone.
RAILROAD BRIDGE STONE A SPECIALTY.
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Crushed Sand Stone for Concrete.
Sand, 98 per cent. Silica, suitable for core work, Iron and Steel work, Cement Block and Mortar. Also Fire Sand.

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We build and furnish all modern improved derricks and cableways for quarries and contractors work.

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Well, that is just what we manufacture and if you want it just send us a sketch of the work you need and we will gladly furnish you estimates.

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Power Hoist with ball bearing, Rope Buffers and Scroll Wheels, Air Compressors and Automatic Tools. New and Second-hand Engines, Boilers, etc.

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Rough Granite to limit of transportation. Address for Quotations.

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Anderson's Patent Power Traveling Crane

is a necessity in every well-equipped, up-to-date, granite-cutting plant. It saves time, saves loss by breaking and chipping, facilitates the execution of orders and increases the profit account by reducing expense. We make them up to 40-ton capacity. We are prepared to furnish plans and working drawings for the most up-to-date stone sheds, and to furnish all Shafting, Pulleys, Hangers, Countershafts, etc., for their Complete Equipment.

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Let us have your contract for advertising space, beginning with the April issue.

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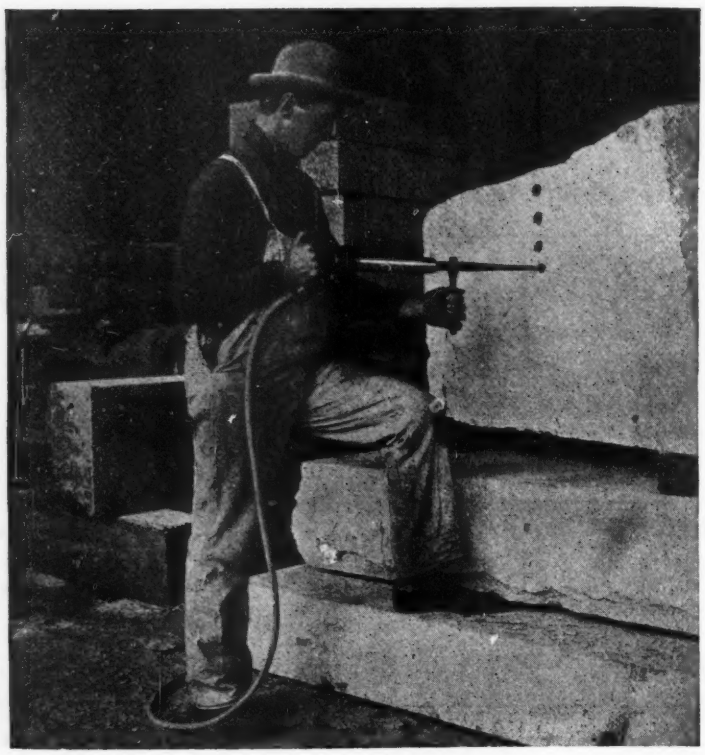

This Tool will drill ⅝-in. x 3-in. Plug Holes in Granite, in from eighteen to thirty seconds.

Surfacing Machines. Carving Tools. Air Compressors.
Engines. Complete Pneumatic Plants.

H. G. KOTTEN, M'f'r,

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Best Drill and Compressor Made,

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Be Sure and Get Our Prices and Guarantee Before Buying.

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CONTRACTORS SUPPLY CO.,

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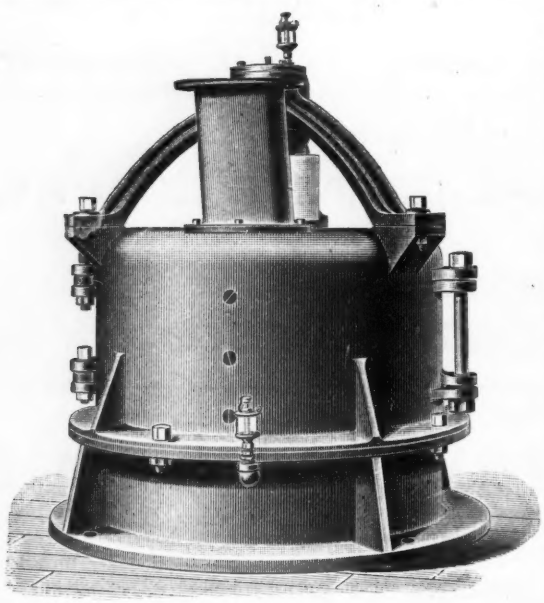

The accompanying cut represents a new design in the line of grinding and pulverizing machinery and it is claimed by the owner and patentee that it possesses advantages which cannot be found in any other mill. He claims that it can grind or pulverize sticky substances to a fineness to which no other mill heretofore was able to reduce these materials. Outside of rock flint in hardness this mill can handle any material that must be reduced. Another great advantage claimed of this mill is, that without screen or changing the speed of the mill, the fineness of the product desired can be regulated, in other words the mill is able to deliver a finished product either in powdered form or granulated without the aid of a screen, and discharge the material from the mill direct into any suitable receptacle in which the material may be shipped. Further, the easy access to the inside of the mill for cleaning or any other purpose is another great advantage, and on account of its enormous capacity in comparison to the small h. p. expended, this mill is the most economical of its kind, in fact although the owner admits that there is not, and perhaps never will be, a mill that would be suitable for everything that has to be reduced, he believes that with the ALSING Pulverator he has introduced the best all round mill now in the market.

The Patents applied for will be assigned to the

J. R. ALSING COMPANY,

Rooms 505-506, 136 Liberty St., New York.

Where all further explanations and illustrations of this Pulverator can be had.

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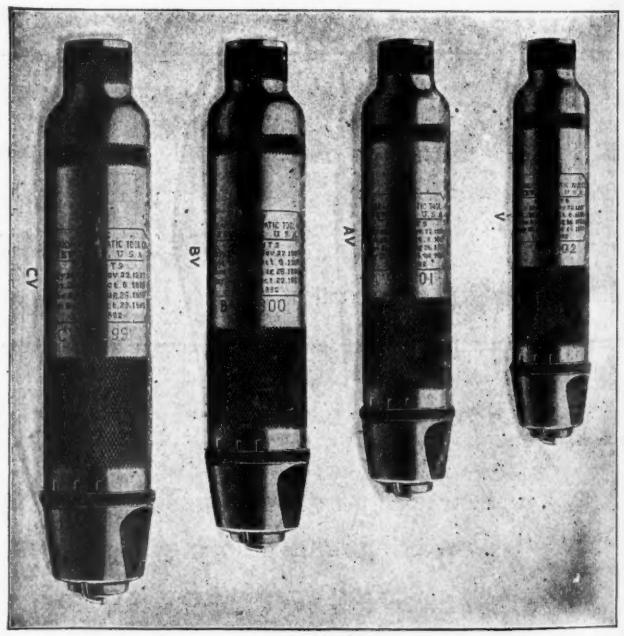

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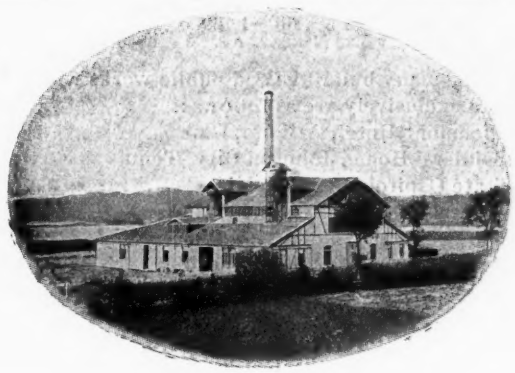

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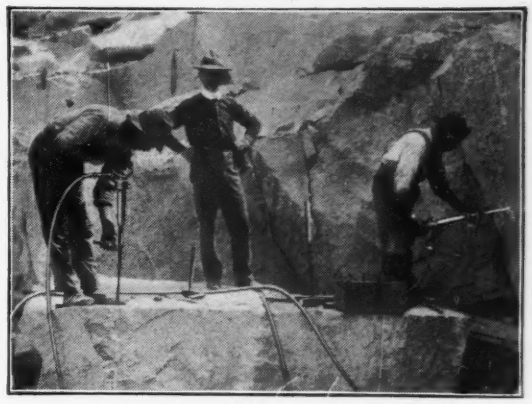

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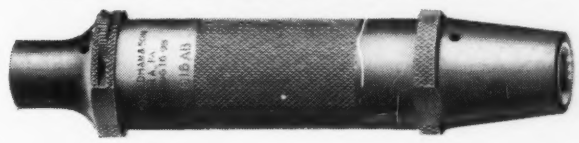

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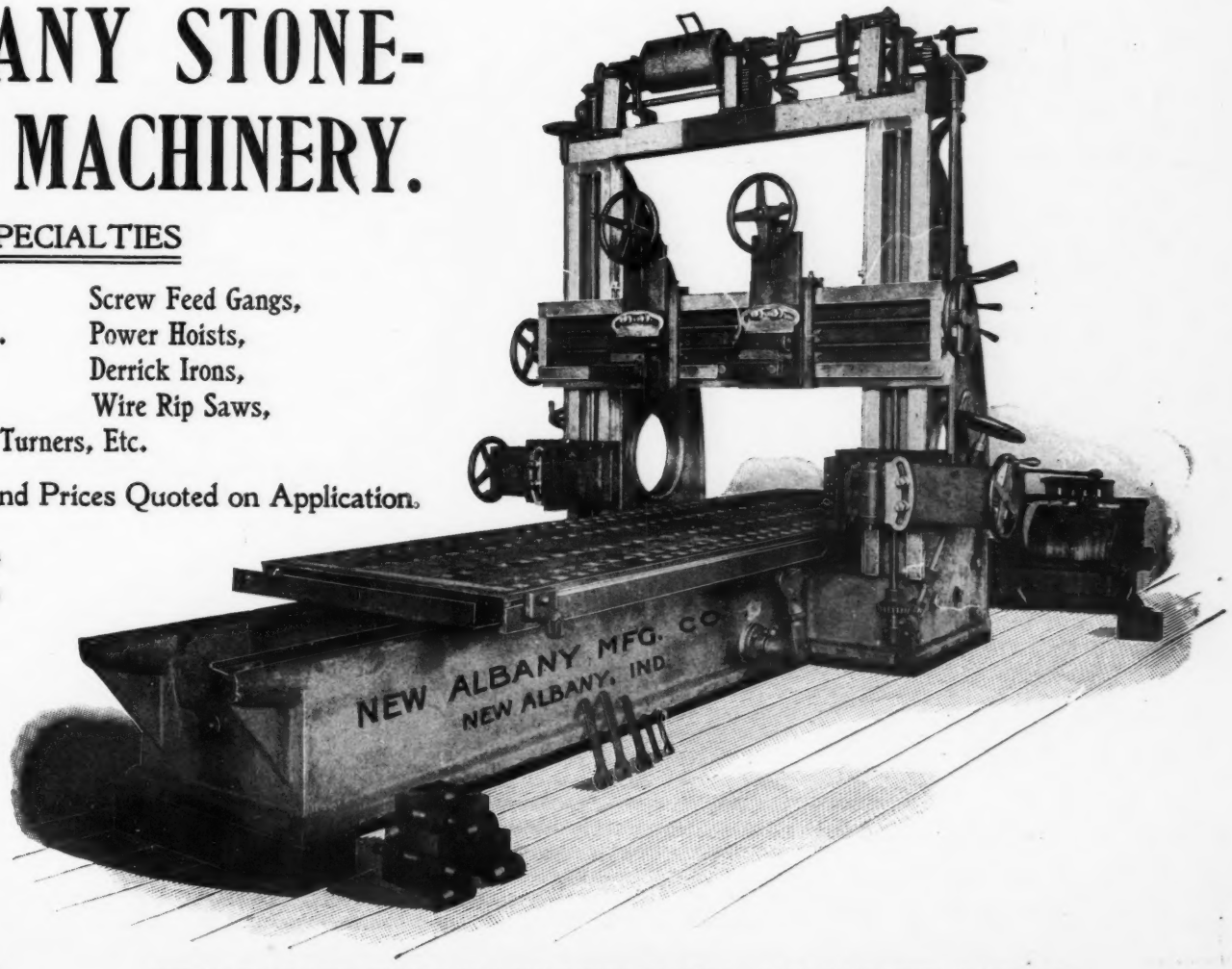

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